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CATALOGUE

OF THE SPECIMENS OF

MAMMALIA

IN

THE COLLECTION

OF THE

BRITISH MUSEUM.

PART I.

CETACEA.

LONDON:
PRINTED BY ORDER OF THE TRUSTEES.
1850.

Mammals

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PREFACE.

THE chief object in preparing the present Synopsis has been, to give at one view a complete Catalogue of all the specimens of Mammalia, and their Osteological remains, at present in the British Museum Collection, and an account of the species known to exist in other collections, but which are at present desiderata in the British Museum, so as to enable travellers, collectors, and others, to assist in completing the National Collection. For this purpose, a short description has been given of all the genera and species at present known to exist in the different museums and private collections, and at the end of each description is added an enumeration, stating the state, age, country, and other peculiarities of each specimen of the kind in the Museum Collection; or when the species is not at present in that Collection, the museum, in which it has been observed, is added after the general habitat of the species.

The different individuals of each species contained in the British Museum Collection are indicated by the letters *a*, *b*, *c*, &c. When the age of the specimen is not stated, it is to be understood that it is full-grown, or nearly so; when other-

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wise, its state is marked immediately after the letter by which it is distinguished; and if the sexes are known, it is stated to be male or female. These particulars are followed by the habitat, which is given as particularly as the materials possessed by the Museum permit. Those specimens which have been presented to the Museum have the name of the donor marked immediately after the habitat.

When there is no such indication, the specimens have been either purchased or procured in exchange; and in this case, whenever the place or person from whence they have been received gives authenticity to the specimen, or adds anything to their history, they are noted as being from such or such a collection.

The various synonyma have been given to the different divisions of the class, and to the genera and subgenera and species, and a reference made to the works in which they have been characterized or described.

In the adoption of the names for these divisions and for the names of the genera and species, it has been thought right to use, whenever it was possible, that which was first used for the purpose. As far as regards the specific name, there is comparatively little difficulty in the application of this simple rule; but ordinal, and especially generic names, have been used by different authors in senses so widely different, and the groups which they are intended to designate have been so variously extended and restricted, that it is no easy matter to determine, where several names have been used, which of them ought to be preferred.

As every original observer will constantly make use of characters which others may have overlooked, or not thought of so much importance as further researches have shown to belong to it, even when a generic name is used, it will of necessity be often employed in a different sense, or with a

more restricted, or very rarely a more extended meaning than its original proposer applied to it. If this was not allowed, many new names must be added to the list of genera, which is already so overburdened with synonyma.

In those cases where the two sexes of the same species, or any particular individual state or variety belonging to it, have been differently named, the names belonging exclusively to the state or individual described are placed after the reference to the specimens to which they apply.

To determine with accuracy the names and synonyma of the species, the various skeletons and other remains of Cetaceous animals in the museums of the College of Surgeons of London and Edinburgh, of the Zoological Society, and of the different local museums, especially those of Haslar, Norwich, Bristol, Liverpool, &c., and the various continental museums of Paris, Leyden, Berlin, Vienna, and Frankfort, have been personally examined, and in many cases the specimens contained in those museums have been sent to the Museum, so that they could be actually compared with the specimens in the Museum Collection.

JOHN EDWARD GRAY.

June 1, 1850.

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N.B. The dark back ground to the skull represents the shape of the head of the animal.

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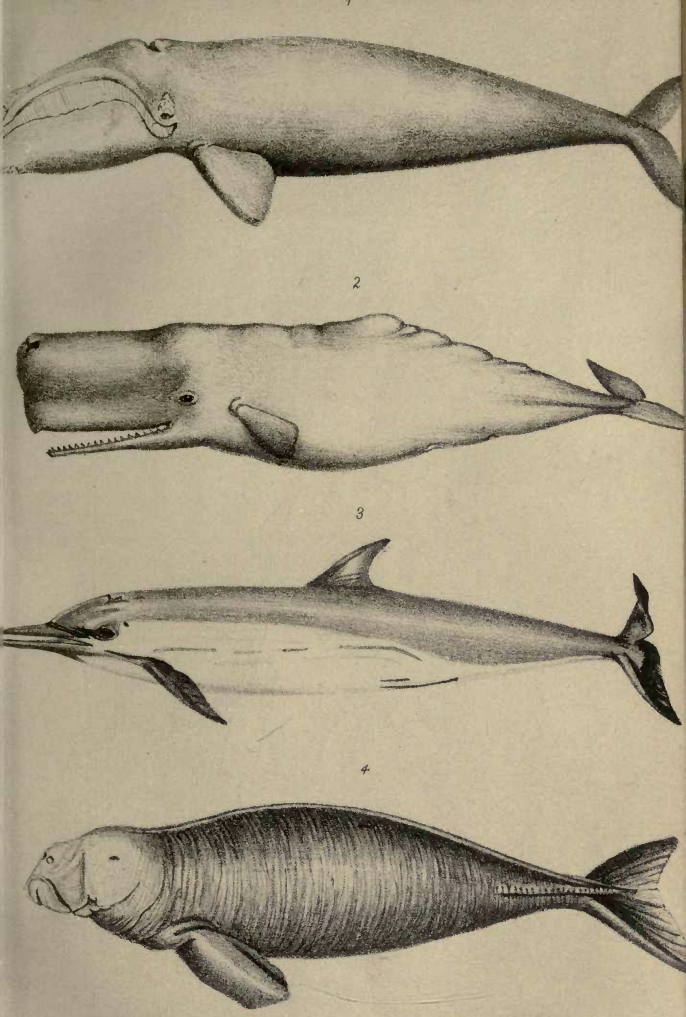

1. BALÆNA. 2. CATODON. 3. DELPHINUS
4. HALICORE.

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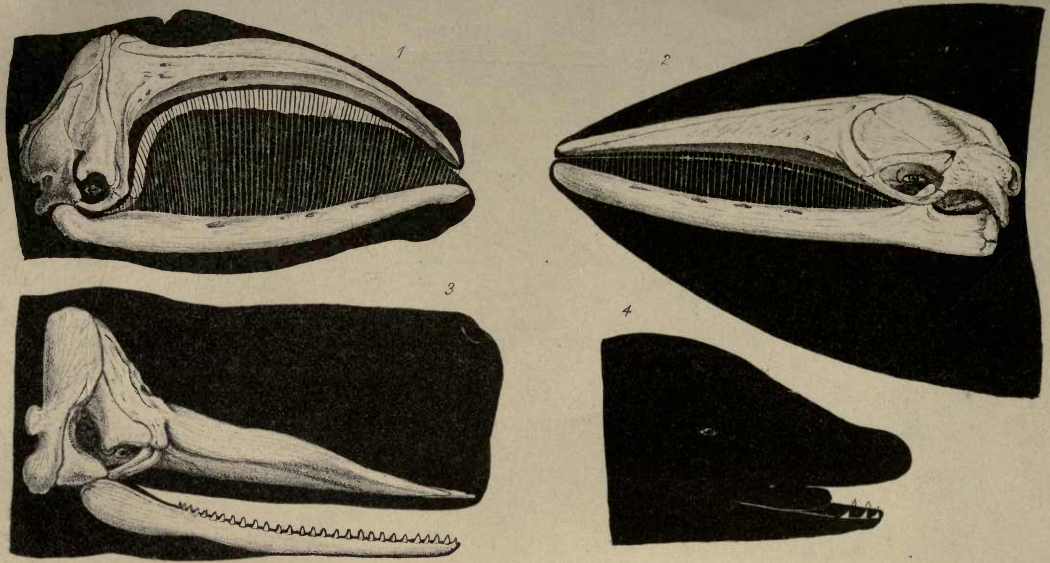

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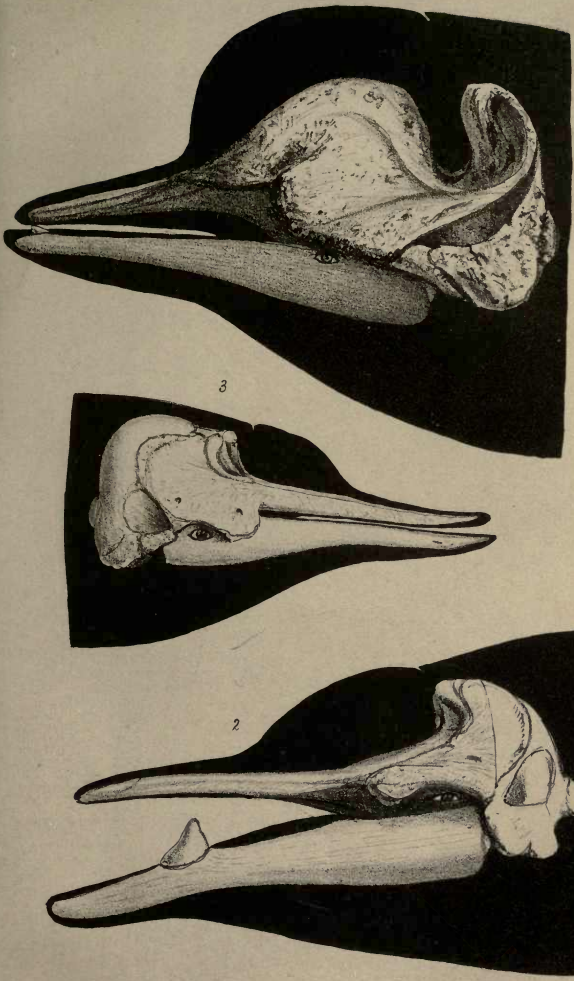
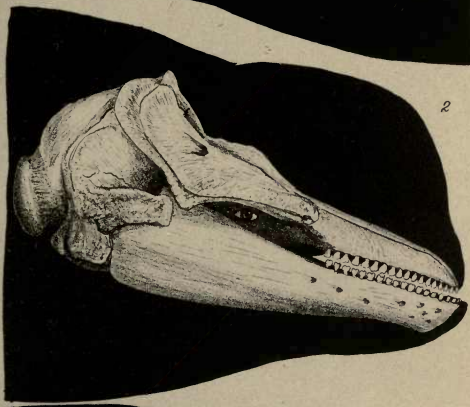
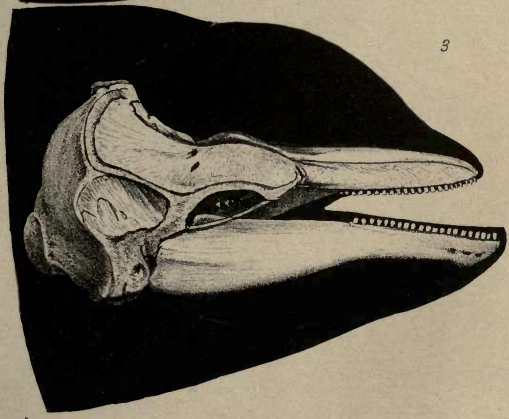


1. HYPEROODON.
2. ZYPHIUS
3. DELPHINORHYNCUS





1.BELUGA. 2.NEOMERIS. 3.PHOCÆNA

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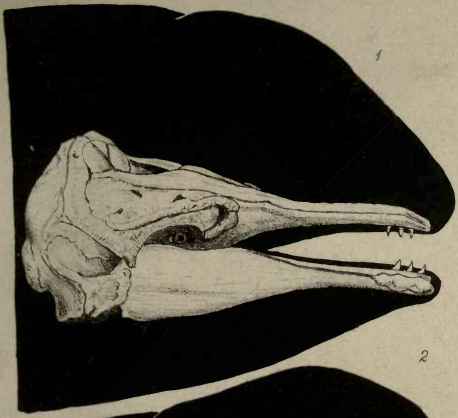

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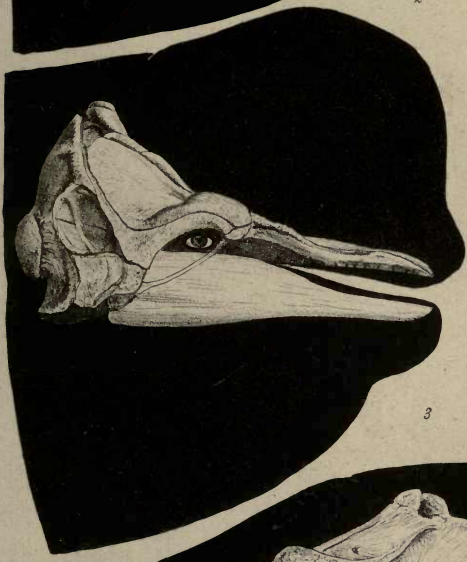

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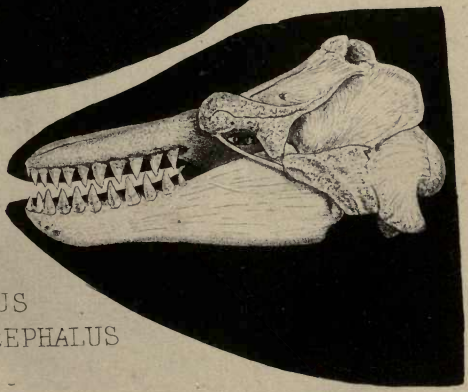

3

GRAMPUS
GLOBICEPHALUS
ORCA

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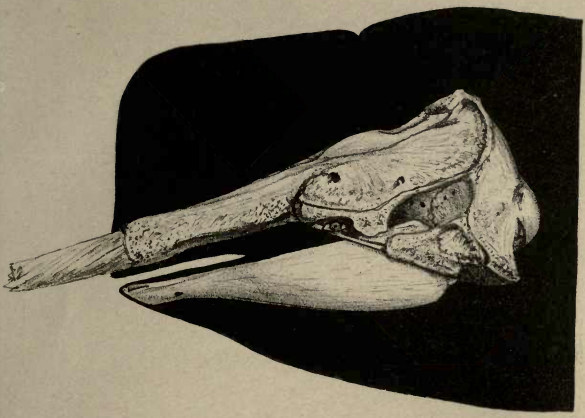
1



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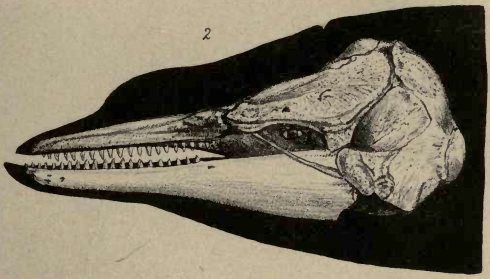

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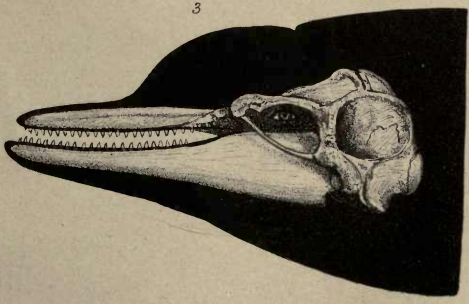

1. MONODON
2. LAGENORHYNCHUS
3. DELPHINUS

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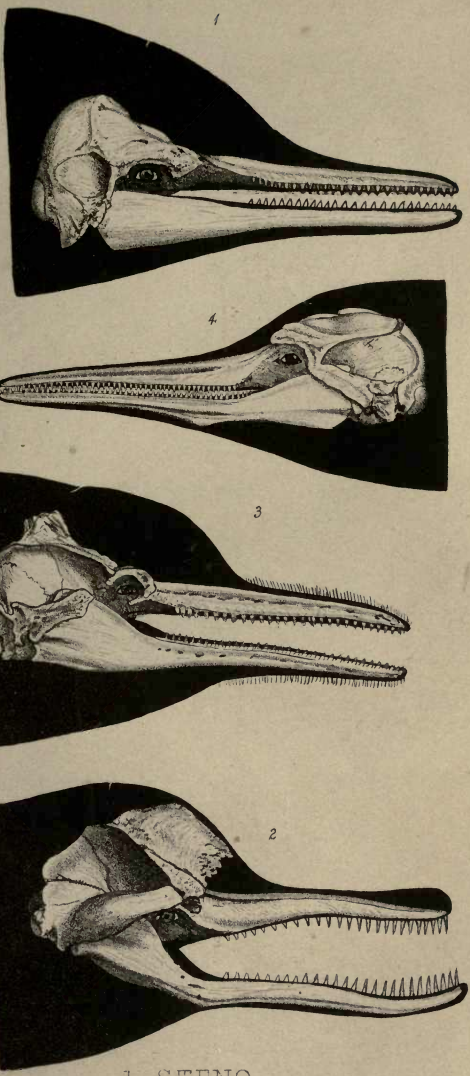

1. STENO
2. PLATANISTA
3. INIA
4. PONTOPORIA

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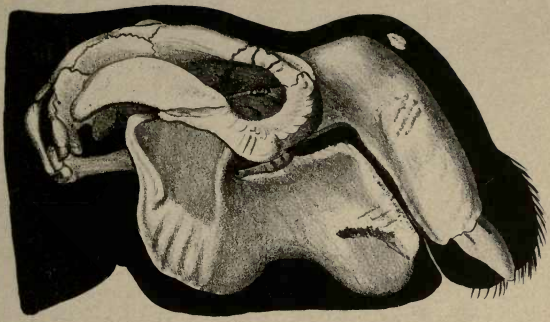
1



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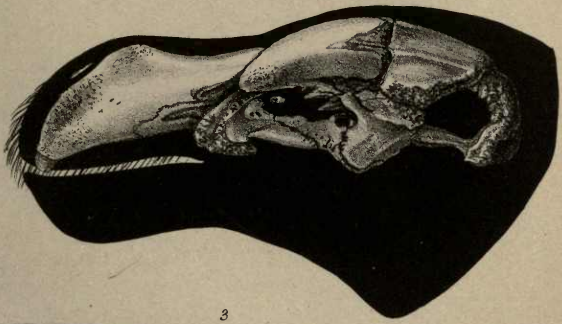

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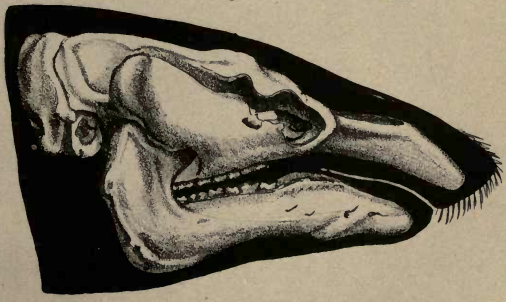

1. HALICORE
2. RYTINA
3. MANATUS

W.Wmg. del et lith.

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CATALOGUE

OF

CETACEA.

Order III. CETE.

Teeth all similar, conical; sometimes not developed.

Palate often furnished with transverse plates of *baleen* or whalebone.

Body fish-shaped, nearly bald.

Limbs short, fin-shaped.

Hinder pair forming a horizontal tail.

Mammalia, Cete, *Linn. S. Nat.* ed. 12. i. 27; *Link, Beytr.* 1795; *Desm. N. D. H. N.* xxiv. 35, 1804; *Fischer, Syn.* 1828; *Eichwald, Zool. Spec.* iii. 337; *Gray, Ann. Phil.* 1825.

Ceti, *Wagler, Amph.* 1830.

Les Cétacés, *Cuvier, Tab. Elem.* 1798; *Cuvier, R. A.* i. 271, 1817, ed. 2. i. 281; *F. Cuvier,* 1829.

Cetaceæ, *Brisson, R. A.* 217, 1762; *Gray, Med. Rep.* xv. 309, 1821.

M. à nageoires, pars, *Desm. N. D. H. N.* xxiv. 32, 1804.

Natantia, *Illiger, Prod.* 139, 1811.

M. pinnata and pinnipedia, pars, *Storr. Prod. Mam.* 1780.

Bipedes, *Latr. Fam. Nat.* 64, 1825.

Sirenia and Cete, *Selys Longchamps,* 1842.

Hydromastologie ou Cétologie, *Lesson, Nov. Tab. Reg. Anim.* 197, 1842.

Fischsucke (Schucher), *Oken, Lehrb. Naturg.* 661, 1815.

Cetacea and Amphibia, pars, *Rafin. Anal. Nat.* 60, 1815.

Belon and Rondelet appear to have known the Dolphin (*Delphinus Delphis*), the 'Ondre' (*D. Tursio*), and the Phocæna (*P. vulgaris*); but their account of the Spermaceti Whale is very indistinct.

Clusius, in 1605, first described and figured the Sperm Whale

in a recognizable manner, from two specimens thrown on the coast of Holland in 1598 and 1601; and Johnston (t. 41 & 42) well figures one of these specimens.

In 1671, Martens, in his 'Voyage to Spitzbergen,' gave a description and figure of the Whalebone Whale, the "Fin Fish" (*Balænoptera Physalus*), the Weise Fish (*Beluga Catodon*), and of the Botzkopt (*Orca Gladiator*); and his figures of the first and second have been the chief authorities for these animals until this time.

In 1692, Sibbald published a small quarto pamphlet, with three plates, describing the Whales which had come under his observation. He divides them into three groups:—I. The small Whales with teeth in both jaws, of which he notices three:—the Orca (*O. Gladiator*), the Beluga, and one from hear-say, which from its size was probably a Porpesse (*Phocæna vulgaris*). II. The larger Whales with teeth in the lower jaw:—1. the Sperm Whale; and 2. the Black-fish. And III. The Whalebone Whales, of which he describes three specimens. The arrangement he proposed is the one used in this paper; and his work forms the groundwork of all that was known on the larger Cetacea up to the Linnæan time: but Artedi and Linnæus committed the mistake of regarding individual peculiarities resulting from accidental circumstances as specific distinctions, so that three of their species have to be reduced to synonyma. [There is a later edition, edited by Pennant, which appeared in Edinburgh in 1773.]

In 1725, Dudley, in the 'Philosophical Transactions' (No. 387), describes all the Whales now recognized by the whalers, except the Black-fish; viz. 1. The Right or Whalebone Whale. 2. The Scrag Whale. 3. The Fin-back Whale. 4. Bunch or Humpback Whale. And 5. The Spermaceti Whale. Cuvier, in his historical account, scarcely sufficiently estimates either Sibbald's or Dudley's contribution.

Bonnaterre, and after him Lacepède, in their Catalogues, collected together with great industry all the materials they could find, in every work that came in their way; hence they, the latter especially, formed a number of species on most insufficient authority: for example, they made a genus on the otherwise good figure of the Sperm Whale figured by Anderson, because the artist had placed the spout on the hinder part of the head; and a division of a genus for the Fin-fish of Martens, because he did not notice in his description or figure the fold on the belly. Yet the characters given by Lacepède, and genera formed by him, have been used in our latest works, some even in Cuvier's last edition of the 'Animal Kingdom'; and many of these species still encumber our Catalogues.

Cuvier, dissatisfied with this state of things, in his 'Ossemens

Fossiles,' examined the various documents and consulted the authorities which had been used by Lacepède; but he appears to have undertaken the work with a predisposition to reduce the number of species, which his predecessor had described, to the smallest number. Thus, he concludes that there are only eleven species of Dolphins, one Narwhal, one Hyperoodon, one Cachalot or Sperm Whale; and he appears to think there are only two Whalebone Whales—the Right Whale and the Finner. To make this reduction: first, he believes that the Hump-backed Whale of Dudley is only a whale that has lost its fin, not recognizing that the *Cape Rorqual*, which he afterwards described from the fine skeleton now shown in the inner court of the Paris Museum, is one of this kind; secondly, that the Black-fish and the Sperm Whale are the same species; an error which must have arisen from his not having observed that Sibbald had figured the former, for he accuses Sibbald of twice describing the Sperm Whale; and when he came to Schreiber's copy of Sibbald's figure, he thinks the figure represents a Dolphin which had lost its upper teeth, overlooking the peculiar form and posterior position of the dorsal fin, and the shape of the head, which is unlike that of any known Dolphin. This mistake is important, as it vitiates the greater part of Cuvier's criticism on the writings of Sibbald, Artedi and others, on these animals. Unfortunately these views have been very generally adopted without re-examination. But, in making these remarks, it is not with the least desire to underrate the great obligation we owe to Cuvier for the papers above referred to; for it is to him that we are indebted for having placed the examination of the Whales on its right footing, and for directing our inquiries into the only safe course on these animals, which only fall in our way at distant periods, and generally under very disadvantageous circumstances for accurate examination and study.

In 1828, Mr. F. J. Knox, the Conservator of the Museum of the Old Surgeons' Hall in Edinburgh, published a Catalogue of the Anatomical preparations of the Whale, in which he gives many interesting details on the anatomy of the *Balæna maximus* and *B. minimus*, which had been stranded near Edinburgh, of the fœtus of *B. mysticetus* from Greenland, and of *Delphinus Tursio* (*D. leucopleurus*), *D. Delphis* and *Phocæna communis*, *Soosoo gangeticus*, and *Halicore Indicus*; but the paper has been very generally neglected or overlooked.

M. F. Cuvier's 'Cetacea' (Paris, 1836) is little more than an expansion of his brother's essays, with a compiled account of the species; but he has consulted with greater attention the works of Sibbald and Dudley, has some doubts about the finned *Cachalots* being the same as the *Sperm Whale* (p. 475), but at length gives

up the subject. He has found out that the *Hump-backed Whale* is evidently a *Rorqual* (p. 305), but does not record it as a species, nor recognise it as the *Cape Rorqual*, nor as Dr. Johnston's Whale; the latter he incorrectly considers the same as *B. Physalus*. He combines together as one species Quoy's short-finned *Rorqual* of the Falkland Islands with Lalande's long-finned *Whale* of the Cape (p. 352). He is in great doubt about the hump of the Cachalots (p. 279); his remarks on that subject and on the Cachalots of Sibbald, show how dangerous it is for a naturalist to speculate beyond the facts before him.

Sir William Jardine's WHALES in the 'Naturalists' Library' is chiefly an abridgement of M. Lesson's miserable compilation, with some extracts from Knox and other English writers on the subject.

Nor are the British species better known; for in Fleming's excellent work they are left nearly in the same state they were in when Linnæus published his twelfth edition of the 'Systema Naturæ'; and Mr. Bell's account and figures are chiefly derived from preceding authors: this revision, though not undertaken with any view to this subject, has taken three or four species from our list, and determined the specific identity of one hitherto neglected, and added two or three species for the first time to our Fauna.

I am by no means convinced that all the species in the following Synopsis are distinct. It is rather to be regarded as a collection of the accounts of the Whales of different localities, derived from the specimens and other materials at present at our command; and I have endeavoured to select from these sources what appeared to afford the best characters for defining them, so as to furnish to those naturalists who might enjoy the opportunity of observing the animals, a short abstract of what has been observed with regard to them, and of referring them to where they could find a more detailed account of each kind. I have been induced to adopt this course, as wherever I have had the opportunity of examining and comparing the proportions of the allied species of distant seas, and of comparing their bones, they have invariably proved distinct, which leads me to believe that many of the other species of different countries, which have been regarded as the same, will be found to be distinct, though representatives of those found in other seas.

SYNOPSIS OF FAMILIES.

Suborder I. *Skin smooth, bald. Teats 2, inguinal. Limbs clawless; fore-limbs fin-shaped; hinder united, forming a forked horizontal tail. Teats inguinal. Nostrils enlarged into blowers. Carnivorous.* CETE.

1. BALÆNIDÆ. Nostrils 2, separate, longitudinal. Palate with baleen. Jaws toothless. Head very large.

2. PHYSETERIDÆ. Nostrils 2, separate, longitudinal. Palate smooth. Lower jaw toothed. Head very large.

3. DELPHINIDÆ. Nostrils united, lunate, transverse. Palate smooth. Jaws toothed; rarely deciduous. Head moderate.

Suborder II. *Skin rather hairy; whiskers rigid. Limbs clawed. Teats 2, pectoral. Nostrils 2, apical. Herbivorous.* SIRENIA.

4. MANATIDÆ. Grinders none, or flat-crowned. Front of jaws covered with horn.

Suborder I. CETE.

Skin smooth, without hair. Limbs clawless; fore fin-like; hinder caudal, horizontal, forked. Teats 2, inguinal. Nostrils enlarged and close together, called blowers. Carnivorous. Teeth conical, all similar, often not developed, and absorbed. Palate often furnished with transverse, pendent, horny plates of *baleen* or whalebone; fringed on the edge.

SYN. Cete, *Gray, Ann. Phil.* 1825; *Selys Longchamps*, 1842.
Cetacea, *Dum. Z. A.* 1806.
Cetaceæ carnivoræ, *Gray, Med. Rep.* xv. 309, 1821.
(Souffleurs) Hydraula, *Latr. Fam. Nat.* 1825, 65.
Natantia Cete, *Illiger, Prod.* 141, 1811.
Cete β, *Fischer, Syn.* 1828.
M. pinnata, *Storr. Prod. Mam.* 1780.
Cetaces, *Cuv. Tab. Elem.* 1798.

Fam. 1. BALÆNIDÆ. WHALEBONE WHALES.

Head very large, one-third the size of the body. Jaws of young with rudimentary teeth, which are never developed; of adult toothless. Palate with crowded, transverse, triangular, pendent, horny plates (whalebone or baleen), with a fibrous inner edge, forming "a screening apparatus." Head large, shelving in front. Blowers far back, longitudinal, separate, each covered with a valve. Spout double. Gullet small. Eyes small, near angle of the mouth.

Balæna and Physeter, *Linn.; Cuv. Tab. Elem.* 1798.
Balænadæ and Physeteridæ, *Gray, Lond. Med. Rep.* xv. 310.
Les Cachalots and Les Baleines, *F. Cuv.* 1829.
Cete, *Illiger, Prod.* 141, 1811.
Cetacea edentula and C. dentata, *Brisson, R. A.* 218, 225.
Edentes abormaux, *Blainv.* 1816.

Physeteridæ, *Gray, Ann. Phil.* 1828; *Selys Longchamps,* 1842.
Cete hydræoglossi § B, *Wagler, N. S. amp.* 33, 1830.
Cetaces, *Lesson, N. Tab. Reg. Anim.* 197, 1842.
Cetacea, *Rafin. Anal. Nat.* 60, 1815.
Ruderer Wale, *Oken, Lehrb. Nat.* 661, 1815.
Balenidia, *Rafinesq. Anal. Nat.* 61, 1815.
Balænidæ, *Gray, Ann. Phil.* 1828; *Zool. Erebus and Terror,* 15; *Cat. Mam. B.M.*; *Selys Longchamps,* 1842.
Vermivora, *Lesson, N. Tab. Reg. Anim.* 201.
Balcœna, *Lesson, N. Tab. Reg. Anim.* 201.
Bale, *Oken, Lehrb. Naturg.* 663, 1815.

The Baleen or Whalebone has generally been considered as the teeth of the whale; but this must be a mistake, for Mr. Knox observes—"In the fœtal *B. Mysticetus* sixty to seventy dental pulps were found on each side of each jaw, making the whole number amount to from 260 to 300. The preparation (n. 56) exhibits a portion of this gum with twelve pulps; had these pulps been confined to the upper jaw and corresponded to the number of baleen plates, it would have formed a strong analogy between the baleen and teeth; but the number of baleen plates in the whale greatly exceeds the number of dental pulps, and the lower jaw, which contained an equal number of pulps with the upper, has neither teeth nor *baleen* in the adult whale. Their presence therefore in the fœtal *Mysticetus* forms one of the most beautiful illustrations of the unity of organization in the animal œconomy. The teeth in the *Balæna* never cut the gum, but become gradually reabsorbed into the system; the very cavity in which the germs were lodged disappear; whilst to suit the purposes of nature, the integumentary system furnishes the *baleen,* which is evidently a modified form of hair and cuticle."—*Knox, Cat. Whales,* 22. Professor Eschricht has shown also that the fœtus of *Megaptera Boops* (Danish Trans. 1845, xi. t. 4) has numerous teeth on the edge of the jaw, though they are never developed. I am inclined to regard the baleen as a peculiar development of hair in the palates of these animals, and somewhat analogous to the hair found in the palates of the genus *Lepus.*

From the examination I have been able to make of the baleen of *Balænoptera rostrata,* and of different masses of small blades of *Balæna australis,* it would appear as if there was, at least in those two species, two series of baleen on each side of the palate; the external series being formed of large triangular blades placed at a certain distance apart; and the internal, in *Balænoptera rostrata,* formed of smaller, much thinner, triangular pieces, placed much closer together and forming a very dense screening apparatus; and in *Balæna australis* the inner series is formed of nu-

merous separate narrow strips of whalebone, each ending in a pencil of hairs, which vary in size from that of small twine to that of tape, half an inch wide; these are placed behind the others, and gradually increase in size from the innermost to the broad external series.

The baleen or whalebone affords good characters for the separation of this family into sections.

Mr. Knox (*Cat. Prep. Whale*) gives the best account of the development, position and distinction between the baleen of the Whales of the North Sea which has come under my observation, and it agrees with the observations I had made on the subject before I could procure his pamphlet.

In *Balæna maximus*, Knox (*Physalus antiquorum*), 314 external or labial plates (*baleen*) were counted on each side; towards each extremity these plates degenerate into bristles, and admit of being counted with difficulty. Towards the mesial line the *baleen* as a mass diminishes gradually in depth, giving the whole palatine surface an elegant arched form. The 314 external or labial plates do not extend to the whole extent in a transverse direction, but a system of numerous small and narrow plates succeeds the external ones. For each external plate, twelve (internal) smaller ones could be easily counted; so that the number of plates which could be counted, and not including the bristly terminations towards the snout, pharynx, and mesial line, stand thus: external or labial plates, 314; internal small plates, corresponding to each external one, 12: total number of baleen plates, 3768. The longest plate of baleen is placed about the centre of each of the sides, and measured 26 inches in length and 15 in breadth. The substance when recent is highly elastic and very heavy; the whole weighed nearly two tons.

It is short or long according to the species of whale, being modified entirely by the more or less arched form of the upper jaw. Mr. F. Knox first pointed out this curious and important fact. The usual conclusion come to by all persons was, that the size of the whale corresponded to the length of the *bone* or *baleen*. Now this is only good with regard to one species of whale, and not at all to the whole group of Whalebone Whales.—*Knox, Cat. Prep. Whale*, 8.

In *Balæna minimus*, Knox (*Balænoptera rostrata*), 307 external or labial (baleen) plates can be counted on each side; towards each extremity these plates degenerate into fine bristles, which were not counted. The plates hang perfectly parallel with each other, and from their closeness and fringed lingual aspect, must act as a very perfect filter in collecting the minute molluscous animals, and at the same time enable the whale to eject the water. The food of the Whale is still a much-disputed point.

It is now generally admitted that the *Mysticetus* lives only on small Medusæ, shrimps, &c., but that the other species of *Whalebone Whale* devour inconceivable quantities of fish; for instance, *M. Desmoulins* states that "600 *great cod* and an immensity (probably as many thousand) of pilchards have been found in the stomach of a single *Rorqual*."

Mr. F. Knox, in dissecting the *Balæna maximus*, saw no cavity in the course of the viscera which could have contained six cod of ordinary size; that of *B. minimus* was empty, although the Firth of Forth, particularly at and above Queensferry, abounds at all seasons with herrings and other fishes and their fry. The want of teeth by no means renders it impossible that the *Balæna* with baleen can live on large fishes; but the extreme narrowness of the gullet (that of *B. maximus* barely allowed the passage of the closed human hand, and that of *B. minimus* was certainly narrower than that of an ordinary-sized cow), added to the want of teeth and the want of proper authenticated information on the subject, are strong arguments in favour of the hypothesis that they do not.—*Knox, Cat. Prep. Whale*, 16.

The thickness of the plate of baleen depends on the number of bristles. In the *baleen* of *Balæna maximus* there are 506 bristles in the thickness of the plate, and by a rude enumeration there appeared to be at least 130 bristles in each inch. The whole breadth of the plate being 5¼ inches, gives us 747 bristles entering into its composition. These bristles are matted together to the extent of 11 inches on the external and 5 inches on the internal margins, by a substance like minute laminæ or scales, and which may be seen by the aid of a microscope to invest the free bristles at the fringed extremity of the plate. We have often observed the facility with which some *baleen* can be split up, and were struck with the fact that the baleen of *Balæna maximus* would not split. The removal of the external lamina in the plate under description shows the cause of this: about 6½ inches from the root of the plate, many of the bristles have deviated from their direct parallel inclination, and become intimately twisted and interwoven with each other. It has been attempted to prove the age of the Whale from an examination of the baleen, in the same manner as we judge of the age of cattle by certain annulated markings on the horns. On the plate before us we can distinctly perceive numerous transverse lines crossing the course of the bristles at right angles. If these transverse lines indicate a periodical check to the growth of the baleen, then the age of the *Balæna maximus* would be 800 to 900 years old, that being the number of transverse lines on the longest plate of baleen.—*Knox, Cat. Prep. Whale*, 9.

The whalebone of the smooth-bodied whales without any back

fins (*Balæna*) is elongate, much longer than broad at the base, and gradually attenuated, and edged with a fringe of equal, lengthened, fine, soft bristles. The baleen is internally formed of a thin layer of fibres covered on each side with a thick coat of 'enamel'; when dry and out of the mouth, the blades are flat.

The whalebone of the plaited-bellied whale with a bunch (*Megaptera*) or a dorsal fin (*Balænoptera*) is short, broad, triangular, not much longer than broad at the base, and rapidly attenuated, and is edged with a series (sometimes rather crowded) of elongate, rigid, unequal bristle-like fibres, which become much thicker and more rigid near and at the tip; the baleen is internally formed of a more or less thick layer of thick fibres, covered on each side with a thin layer of enamel, and when dry and out of the palate they are curled up and somewhat spirally twisted.

The baleen of the *Balænæ* is alone designated *Whalebone* (or rather *Whale-fin*, as it is usually called) in commerce. The baleen of the other genera of this family is called *Finner-fin* or *Humpback-fin*. The wholesale dealers in baleen, in the 'London Directory,' are called *Whale-fin Merchants*, and whalebone occurs under the name of *Whale-fin* in the Price-current. In the 'London New Price-current' for 1843, the *South Sea Whale-fin* varied during that year from 200*l.* to 305*l.* per ton, and there is no price named for *Greenland Whale-fin*. See *Maccul. Com. Dict.* i. 1344.

The baleen was formerly thought to be the tail of the animal. See *Blackstone, Commen.* i. 233, quoted by *Macculloch, Commercial Dict.* 1344.

Synopsis of the Genera.

a. Dorsal fin none. Belly smooth. Baleen elongate, slender.

1. Balæna.

b. Dorsal fin distinct. Belly plaited. Baleen broad, short.

2. Megaptera. Pectoral fins elongate. Dorsal fin low.

3. Balænoptera. Pectoral fins moderate. Dorsal fin falcate, $\frac{3}{5}$ length from nose. Vertebræ 46 or 48.

4. Physalus. Pectoral fins moderate. Dorsal fin falcate, $\frac{3}{4}$ length from nose. Vertebræ 54 or 64.

A. *Back not finned. Baleen elongate, slender, straight. Belly smooth.*

1. Balæna. Right Whales.

Head rather blunt, swollen, with a slight beard, consisting of a few scattered white hairs on the anterior extremity of both jaws. —*Scoresby, Arct. Regions*, i. 458. The baleen or whalebone is

narrow, elongate, linear, very gradually tapering, fringed on the inner edge with numerous fine, soft, flexible fibres of a nearly uniform length, consisting internally of a thin layer formed of several series of fibres, covered on each side by a thick coat of enamel. Throat and belly smooth, not plaited. Dorsal fin none.

The seven cervical vertebræ are soldered together, and sometimes the first dorsal is equally soldered to the cervical.—*Duvernoy in Cuvier, Anat. Comp.* ed. 2. i. 195.

They live in the ocean, but come into the shallow and sheltered bays to bring forth their young.

The fœtus has no appearance of whalebone on the palate, and the lips are very large, and longly depending over the sides of the under jaw.

Balæna, sp. *Linn.*; *Illiger, Prod.* 142, 1811.
Balæna, *Rafin. Anal. Nat.* 61, 1815; *Lacepède.*
Balœna, *Lesson, N. Tab. Reg. Anim.* 202.
Balæna § *a, Fischer, Syn. Mam.* 521.

" The length, so is the breadth (of the baleen), a mere consequence of the extreme narrowness of the palate in the *Mysticete* compared to that in the *Balœna* (*Physalus*) *maximus*."—*Knox, Cat. Whale*, 29.

Through the kindness of Messrs. Smith and Simmonds, and Mr. Smith of Messrs. W. Westall & Co., Whale-fin Merchants, I have been enabled to examine and compare numerous species of the *whalebone* or *baleen* received from different countries, and to compare their peculiarities as exhibited during its preparation.

The *fins* or *whalebones* of each series together are called a " side of bone;" the largest are in the middle, from whence they gradually diminish away to nothing at each extremity: the largest fin on the side is called the " sample blade."

They know in the trade three distinct kinds. 1. The *Greenland*, from Greenland, Davis' Straits, and various parts of the North Sea, which is the best. 2. The *South Sea*, or *Black fish whale-fin* brought by the South Sea Whalers. And 3. The *North-west Coast*, or *American whale-fin*, which was first imported about five years ago, and at first sold for a high price, but it has now fallen, and is considered as only a large kind of South Sea; but from the examination I have been able to make, I should believe that these three kinds are each produced by very different species of whales.

The three kinds are very different in shape. The outer edge of the *Greenland* is curved considerably; in that of the *North-west Coast* it is much more straight, and in that of the *South Sea* almost quite straight. Figs. 3, 4 and 5, in Plate I. (of the *Zoology*

of the Erebus and Terror) represent the three different kinds in the same position, and on the same scale, being one-fourteenth of the natural length and breadth. The fibres on the edge in the *Greenland* and *Margined* Whales are very fine, flexible and long, forming only a thin series; in the *South Sea* they are rather coarser; but in the *North-west Coast* much thicker and coarser; quite bristly, and much more so towards the apex; and they are more erect and form a thicker series, approaching in that character to the *baleen* of the *finners*.

The following are the measurements of the samples of the different kinds of "*Whale-fin*" in the British Museum:—

	Greenland.		*North-western.*		*Southern.*	
	in.	lin.	in.	lin.	in.	lin.
Length of blade, entire ...	144	0	112	0	90	0
Width at base	11	0	10	0	9	0
„ at middle	6	0	4	0	3	6
„ at ¾ length	.....		2	4	2	0
„ of hair at end	10	0	7	0	7	0
Thickness at base	4	4	4	5	0	3½
„ at middle	4	4	0	4½	0	2½
„ at ¾ length ...	0	2½	0	3½	0	2

The *Greenland fin* has the hair on its edge generally stripped off, and is clean and bright when it is brought to England; but this may be from the care the North Sea whalers take in collecting and cleaning it (as described by *Scoresby. Arctic Regions*, i. 418), and the blades are brought home in bundles about 100-weight each. On the other hand, the *North-west Coast* "*fin*" and the *South Sea* "*fin*" have the hair left on the edges; they are brought home in bulk, and are always covered with an ashy-white soft laminar coat, looking like the rotted external layers of the enamel. This coat has to be scraped off with large knives before it is used or prepared, and the surface after the scraping is not so polished and resplendent as that of the *Greenland* "*fins*."

The whalebone is boiled for about twelve hours, to render it soft before it is divided into strips—it then divides very easily. The smaller pieces, when softened, are split by a small machine into very narrow strips like bristles, and used for bristles to make brooms, &c. &c.

For every economical purpose, the Greenland "fins" are preferred, and last much longer, even when divided into the false bristles; and the Greenland fin will alone do for the finer work, such as the strips for plaiting for bonnets, or to make ladies' riding-whips, or the covering of telescopes and other tubes; the white strips for these purposes being taken from pale longitudinal lines on the enamel of the Greenland fins.

The Australian baleen of *B. marginata* is nearly equally fine, and if imported might, by its natural white colour, be very useful for many economical purposes, notwithstanding its small size.

The following paragraph from the *Daily News* of the 20th of December, 1849, gives some idea of the quantity of whalebone now used:—"The receipts of whalebone in the United States since January have been 2,285,095 lbs., and the exports to date were as follows:—To North Europe, 587,926 lbs.; to France, 515,351 lbs.; to Great Britain, 378,449 lbs.; to other parts, 9296 lbs., making a total export of 1,491,022 lbs. The receipts for the last eight years were 18,912,206 lbs., and the exports 11,299,811 lbs. The quantity taken for consumption during the same period was 7,612,389 lbs. The stock in the United States at date was estimated at 903,000 lbs.: viz. in New Bedford and Fairhaven, 368,000 lbs.; New York, 275,000 lbs.; in all other places, 260,000 lbs."

These whales yield the *train oil* of commerce; but *train* appears to be applied by the whalers as we use *drain*; they refer to the *train* of the blubber, when speaking of the oil of dolphins, &c., and appear to call all blubber-oil *train*, in contradiction to head-matter, or spermaceti, which Sibbald says is called "*whale-shot*" by the English; it is so called by the Dutch whalers.

* *Body smooth above.*

† *Baleen tough, flexible; enamel thick; internal fibres few, very slender, forming a fine, thin, flaccid fringe.*

1. Balæna mysticetus. The Right Whale.

Head depressed. There are two series of tubercles on each side of the lower lip; and according to Scoresby's figure the head is $\frac{2}{7}$, the fins are $\frac{1}{3}$, the vent $\frac{2}{3}$, and the sexual organs $\frac{4}{7}$ from the head.

Females larger than the males.

The nose of the skull is regularly and gradually arched above, rather wide behind, near the blow-hole; the nose and the intermaxillary bones regularly taper in front. The hinder end of the jaw-bones is obliquely produced behind, and the frontal bones are narrow, nearly linear, and oblique; temporal bone narrow, oblique.

The *baleen* is very long, varying from 9 to 12 feet, linear, tapers very gradually, and of nearly the same moderate thickness from end to end, and covered with a polished grey or greenish black enamel. The internal fibres occupy a small part of the substance, are parallel, of a fine uniform texture, and black; the enamel, which forms by far the greater part of the substance, is generally blackish; but it is sometimes, especially on

the inner side of the "fin," paler in longitudinal stripes. The fibres on the edge, like the internal fibres of which it is a continuation, are very fine and black. The "fins" or pieces of baleen are flat, or as the merchant calls them "kindly," so that they produce straight pieces fit for the better kind of parasols and umbrellas, &c., when cut into strips.

Balæna mysticetus, *Linn. S. N.* i. 105; *Gmelin, S. N.* i. 223; *Müller, Zool. Dan.* 6; *Erxl. Syst.* 601; *O. Fab.* 32; *Schreb. Saugth.* t. 322; *Cuv. R. A.* i. 285, ed. 2. i. 296; *Oss. Foss.* v. 361. t. 25. f. 9, 11. t. 26. f. 25; *Lesson, Œuv. Buffon*, i. 294. t. 11; *Desm. Mam.* 527, 798; *Desm. Dict. Class. H. N.* ii. 160; *Fischer, Syn.* 521; *Gray, Zool. Erebus and Terror*, 15, 47. t. 1. f. 4, baleen; *Cat. Mam. B.M.* 104.

Balœna mysticetus, *Lesson, N. Reg. Anim.* 202.

The Right, or Whalebone Whale, *Dudley, Phil. Trans.* xxxiii. 256; *Scoresby, Arctic Regions*, i. 448. t. 12. f. 1.

B. Grœnlandica, *Linn. Mus. Ad. Frid.* i. 51.

B. vulgaris, *Brisson, Reg. Anim.* 347.

Bal. vulgi, *Aldrov. Pisc.* 688.

Bal. vulgo dicta, *Rondel. P.* 475. fig.

Bal. Rondeletii, *Willoughb. Pisc.* 35.

B. Physalus, *Pallas, Zoogr.* i. 289, not *Syn.*

De Balænis hujusmodi Bipennibus, *Sibbald, Phal.* 27.

B. Mysticetus borealis, *Knox, Cat. Prep. Whale*, 21.

Balæna mysticetus borealis, *Knox, Cat. Anat. Prep. Whale*, 21.

Var. 1. Balæna glacialis occidentalis, *Klein, Misc. Pisc.* ii. 12; *Müller, Z. Dan. Prod.* 7; *Bechst. Naturg. Deutsch.* 1238; *Virey in Nov. Dict. Sci.* iii. 183; *Desm. Mamm.* 527.

B. Islandica, *Brisson, Reg. Anim.* 350.

B. Mysticetus β. Islandica, *Gmelin, S. N.* i. 223; *Fischer, Syn. Mam.* 522.

B. Nord Caper, *Bonnat. Cet.* 3; *Lacep. Cet.* 103. t. 2. t. 3; *Gerard, Dict. Sci. Nat.* iii. 438.

Nord Kapper, *Egede, Grœnl.* 55.

Nordcaper, *Anders. Isl.* 219; *Crantz, Grœnl.* 145.

Var. 2. Rock-nosed Whale, *Guérin in Jameson's N. Edinb. Phil. Journ.* 1845, 267.

Inhab. North Sea.

a. Skull and lower jaw; North Sea.

The specimen figured in *Cuv. Oss.* v. t. 25. fig. 9–11.

b, c. Two plates of whalebone.

Greenland. Presented by Messrs. Smith and Simmonds.

The specimens figured in the 'Voyage of the Erebus and Terror,' p. 47. tab. 1. fig. 11.

d. One plate of whalebone; Greenland.

The Nord Caper, *Anderson*, does not appear to differ from this species. It is said to be thinner, and infested with barnacles; this would lead one to think that it was established on a specimen out of health. Lacepède's figures above cited, from a drawing by Backstrom, communicated by Sir Joseph Banks, are the best figures of the Right Whale after Scoresby's.

A variety, or probably different species, is thus noticed by M. Guérin, the surgeon of a whaler:—

The Rock-nosed Whale is said "never to leave the coast, and even to make the circuit of the bays. The most important point (of difference) is the comparative size of the head and body. The head is always considerably more than $\frac{1}{3}$, while in the true *B. mysticetus* it is, as stated by Scoresby, less than $\frac{1}{4}$, or as 16 to 51. The whalebone is longer in comparison to the length of the animal, but the laminæ are thinner for their length; the body is broader and terminates more abruptly; the skin is dark velvet-brown, and has fewer spots and yields less oil. The whalers in general seem to think that it is merely a difference of age that causes this difference in their external characters, but cubs or sucklers are as often found amongst the Rock-noses as amongst the Middle Ice Whales; the former must have attained the age of maturity."—*Guérin, in Jameson's N. Edin. Phil. Journ.* 1845, 267.

In some individuals the *baleen* is yellowish white, the fibres and enamel pale colour.

There is the stuffed skin of a fœtal specimen, 29 inches long, from Dr. Knox' Collection, in the *Anat. Mus. Univ. Edinb.*; the lower lips have a broad flap, which is to cover the baleen when developed. There is a skeleton of the same fœtus prepared by Dr. Knox. The bones of the head are ossified, and show the characters of the genus; that is, the upper jaw is high, arched, and its sides are only slightly keeled, not depressed and expanded as in *Balænoptera*, &c. The jaws show the grooves for the teeth. The rest of the skeleton is only cartilaginous. These specimens are described by *Dr. Knox, Cat. Anat. Prep. &c.* 21.

There is a skeleton of a half-grown specimen, brought home by M. Guérin, being prepared in the *Anat. Mus. Univ. Edinb.* (head 6 feet long?).

2. Balæna marginata. Western Australian Whale.

The baleen very long, slender (nearly eight times as long as wide at the base), pure white, thin, with a rather broad black edge on the outer or straight side.

Balæna marginata, *Gray, Zool. E. & T.* 48. t. 1. f. 1, baleen. Inhab. W. Australia.

a, *b*, *c*. Three plates of baleen. Length, 20 inches; width at the base, 2 inches 6 lines. Western Australia. Presented by J. Warwick, Esq.

The specimens figured in the 'Voyage of the Erebus and Terror,' tab. 1. fig. 1.

This species is only known from three laminæ of baleen. It is so much smaller and broader, compared with its width at the base, and so differently coloured from the baleen of any of the other species, that I feel justified in considering it as distinct.

†† *Baleen thick, rather brittle; enamel thin, internal fibres numerous, thick, rather intertwined, forming a thick rigid fringe.*

3. BALÆNA AUSTRALIS. The CAPE WHALE.

Uniform black. Skull convex. The nose of the skull high, straight, and rather suddenly bent down in front; the nose and the intermaxillary bones contract in the middle, and then continue of the same width in front. The hinder part of the jaw-bones is nearly perpendicular, and the temporal bones are broad and erect.—*Cuv. Oss. Foss.* v. t. 25. f. 5–7.

The fœtal skull is shorter, lower, and the hinder part of the jaw-bone is more slanting.—*Cuv. Oss. Foss.* v. t. 25. f. 1–3.

Baleen is about 6 feet long, elongate triangular, rather rapidly tapering to a fine point. The internal fibres are rather coarse, but much finer than the former.

Balæna australis, *Desmoulin, Dict. Class. H. N.* ii. 161. t. 140. f. 3, fœtus; *Gray, Cat. Mam. B.M.* 104; *Zool. Ereb. and Terror*, 15, 48. t. 1. f. 3, baleen.

B. du Cap, *Cuv. Oss. Foss.* v. 368. t. 24. t. 25. f. 1–8, t. 26. f. 7, 11, 13, 23, t. 27. f. 10, 15, 24.

The Cape Whale, or Right Whale of South-Sea Whalers, *Bennett, Narr. Whaling Voyage*, ii. 229.

Southern Whalebone Whale, *Nunn, Narrat. Favourite*, 181, fig. ?.

Common Black Whale, *Ross, Antarctic Voy.* i. 169; ii. 327.

Inhab. South Sea, *Delalande.* Antarctic Ocean, *Ross.* Skeleton and fœtus, Mus. Paris.

a. Bone of fore-arm. Cape of Good Hope.

b, *c*. Two plates of "South Sea Whalebone." Pacific Ocean? Presented by Messrs. Smith and Simmonds.

The specimens figured in the 'Voyage of the Erebus and Terror,' p. 48. tab. 1. fig. 3.

d, *e*. Two plates of whalebone. Pacific Ocean?

Mr. Warwick has kindly sent me some notes and the following

measurement of a female whale of this species taken at False Bay Fishery, said to be full-grown, and considered by the whalers as of large size :—

	ft.	in.
"Total length	68	0
Height of the body	14	0
Length of head	16	0
Width of tail	15	6
Length of ribs	10	6
Diameter of gullet	0	2

"I could not pass my hand through it. Number of vertebræ 52. From all the conversations I have had with the whalers, I do not think the Cape Whale ever attains the size of the Greenland species. These whales of the Cape, I constantly found covered with *Tubicinella Balænarum* and *Coronula Balænaris*; but the *Spermaceti Whale* was seldom or never so covered: they occur principally on the head, where they are crowded, and but rarely on the body, and then only single scattered ones."

In False Bay they carry on the fishery from the shore, and during the time Mr. Warwick was there, only one bull out of sixty specimens was killed, the females coming into the bay to bring forth their young. He skinned one, which was supposed to be not more than eight or ten days old; it was 20 feet long.

The baleen of this animal is sometimes called the Whale-fin of the "Black Fish," the name that is sometimes applied to the *Physeter Microps*.

There are sometimes imported with these baleen, a few yellowish white "fins," which seldom exceed 2 feet in length; in these, the fibres as well as the enamel are white; they are not so transparent as the pale variety of the Greenland fins before referred to; they have the same coarse texture, and are brittle like the black southern specimens; and as they do not take so good a polish, they cannot be used for making shavings for plaiting, &c.

There has lately been brought by the South Sea ships several hundredweight of a very small kind of whalebone, which is implanted in the remains of the palate, in three or four series, gradually diminishing in size towards the innermost series; each piece is linear, compressed, almost $\frac{1}{4}$ to $\frac{1}{2}$ of an inch wide, rounded on the edge, varying from 5 to 8 inches in length, and ending in a tuft of black hair-like fibres; in texture, colour, and external appearance it exactly agrees with the baleen of the Southern Whales, and I suspect it must form the inner part of the "screening apparatus" of that animal; and if that is the case, the existence of these separate pieces near the middle of the roof of the mouth will form a very peculiar character in this kind of whale. I am further strengthened in this belief by perceiving amongst

some short pieces of "Southern Whale-fin," probably forming the end part of a side, at the inner, or shorter or palatine edge of each blade, two or three small separate linear processes of whalebone ending a parcel of hairs similar to the pieces and form above described, but of a smaller size and rather more wavy. *Scoresby*, who gives a very detailed account of the position of the baleen in Greenland whales (*Arct. Reg.* i. 457, and ii. 415), does not mention anything of the kind in that animal; but it is described as occurring in the Fin Back by Mr. F. Knox—see *Cat. Anat. Prep.* 7. n. 5.

4. Balæna Japonica. The Japan Whale.

Black; the middle of the belly to the vent, and a spot on the chin and over the eye, white; the nose with a rounded prominence in front; the head is $\frac{2}{5}$ the entire length; the pectoral fin large, pointed.—*Temm.*

Balæna australis, *Temm. Fauna Japon.* t. 28, 29.
B. Japonica, *Gray, Zool. E. & T.* 15, 47. t. 1. f. 2, baleen.
B. Japonica, *Lacep. Mém. Mus.* iv. 473; ? *Desm. Mam.* 528, 802; *Fischer, Syn.* 522.
B. lunulata, *Lacep. Mém. Mus.* iv. 475; ? *Desm. Mam.* 528, 803; *Fischer, Syn.* 522.
Inhab. Japan, visiting the coast periodically. The head is often covered with barnacles.

This species is only described from a model, made in porcelain clay by a Japanese, under the inspection of a Japanese whaler and M. Siebold; but no remains of the animal were brought to Europe. The figures in the *Fauna Japonica* are from this model.

B. Japonica and *B. lunulata*, Lacep., are from Chinese drawings.

Var.? 1. North-west Whale, Balæna Japonica?, *Gray, Zool. Erebus and Terror*, 15. t. 1*. f. 2, baleen.

a, b. Two plates of "North-west Coast Whalebone." North-west Coast of America. Presented by Messrs. Smith and Simmonds.

The specimens figured in the 'Voyage of the Erebus and Terror,' p. 47. tab. 1. fig. 2.

c, d. Two plates of "North-west Coast Whalebone." North-west Coast of North America.

The baleen is nearly as long as the Greenland, varying from 7 to 12 feet long, and is slender; but for the same length it is nearly twice as thick in the substance, and it gradually diminishes in thickness towards the ends. The enamel, when the outer coat is removed, is not so polished as that of the Greenland, and when cut through, the centre fibres are thicker, tubular, and occupy

about $\frac{1}{5}$ to $\frac{1}{8}$ of the thickness—much more in proportion than they do on the Greenland fins, and the enamel and fibre are coarser in texture and much more brittle.

The fins or blades of this whalebone are generally flexuous, or "not kindly," so that when cut into strips, they have the defect of being variously bent, and tapering towards the end, which, with their brittleness, greatly reduces their value.

Mr. Bennett observes that "The Right Whale, so abundant, and so little molested in the northernmost waters of the Pacific, or off the north-west coast of America, is probably identical with the Greenland species."—*Whaling Voyage*, ii. 229. The whalebone or baleen shows it is more allied to the Cape species, but apparently distinct from it.

5. Balæna antarctica. The New Zealand Whale.

Balæna antipodarum, *Gray, Dieffenbach, N. Zealand*, t. 1.
Right Whale, *Polach, N. Zealand*, ii. 401.
Balæna antarctica, *Gray, Zool. Erebus and Terror, Cete*, 16. t. 1, not *Lesson*.
Inhab. New Zealand, Jackson Bay.

Described from a very accurate drawing of a specimen taken in Jackson Bay; it is very like Temminck's figure of *B. australis*, but there is a roundish prominence on the front of the under jaw similar to the one on the nose; the latter is only figured in that species; the pectoral fin, as in that species, is about $\frac{2}{7}$ from the chin.

M. Milne-Edwards informs me that a skeleton of this whale has been lately received by the Paris Museum.

Lesson, *Œuv. Buffon*, i. 391 (*Tab. Reg. Anim.* 202); *Wagler, N. S. Aus.* 33, give the name of "*B. antarctica*" to the "Right or Black Whale of the whalers of the Antarctic seas."

Chamisso figures a species of Whalebone Whale as *Balæna Kuliomoch*, found in the Aleutian seas, from a wooden model made by the Aleutians: see *N. Act. Nat. Cur.* t. 17. f. 1. It is noticed as *B. Culammak* by *Pallas, Zool. Ross. Asiat.* i. 288.

** *Back knobbed.* ? Cyphonotus, *Rafin.*

6. Balæna gibbosa. The Scrag Whale.

"A *Scrag Whale.* Is near akin to the *Fin-back*, but instead of a fin upon its back, the ridge of the after-part of its back is scragged with half-a-dozen knobs or knuckles. He is nearest the *Right Whale* (*B. mysticetus*) in figure and quantity of oil. His bone (whalebone) is white, but wont split."—*Dudley.*

"A Scrag Whale," *Dudley* (*Phil. Trans.* xxxiii. 259); *and Whalers.*

Balæna gibbosa, *Erxl. Syst.* 610 (from *Dudley*); *Gmelin, S. N.* i. 225; *Bonnat. Cet.* 5; *Lacep. Cet.* 113; *Virey, N. Dict. H. N.* iii. 185; *Gerard, Dict. Sci. Nat.* iii. 440; *Desm. Mamm.* 528; *Fischer, Syn.* 523.

B. gibbis vel nodis sex B. macra, *Klein, MSS. Pisc.* ii. 15.

B. bipennis sex in dorso gibbis, *Brisson, R. Anim.* 351.

Knotenfish oder Knobbelfish, *Anders. Isl.* 225; *Crantz, Govern.* 146.

Bunched Mysticete, *Shaw, Zool.* ii. 495.

Inhab. Atlantic Ocean.

Dudley's account is copied by Anderson, Crantz, and all succeeding authors. It may be only a *Megapteron.*

Cuvier thought the Scrag Whale (*B. gibbosa*) was only a Rorqual (*Oss. Foss.* v. 267) which had been mutilated, but I suspect, from Dudley's account of the form, that it must be a *Balæna,* probably well known formerly. Indeed Beale (*Hist. Sperm Whale*) speaks of it as recognized by the whalers now.

Bonnaterre, and all succeeding authors, have referred to this genus the *Hump-backed Whale* of Dudley, not understanding his description of the belly "being reeved," that is, plaited; they call it *Balæna nodosa.*

B. *Back finned. Head elongate, flattened. Palate broad. Baleen short, broad, twisted when dry. Belly plaited.*

Syn. Balænoptera, *Lacep. Cet.*
Mysticetus, *Wagler, Syst. Amph.*
Rorqualus, *F. Cuvier, Cet.*

The whalers recognize two kinds of this division, the *Humpback* and the *Finner*; Cuvier (*Oss. Fos.*) believed there were only two species, one inhabiting the Northern and the other the Southern ocean, and these now prove to be the types of the genera distinguished by the whalers.

Several authors having been induced by Cuvier's example to believe that all the *Northern Finners* were a single species, thought that the variations in the proportions might depend on the age of the specimens examined. Thus,

1. Dr. Jacob (*Dublin Journ. Science,* 1825, 333) attempts to prove that *Balæna Boops, B. rostrata, B. musculus,* and *B. jubartes* were but one species; and he has taken considerable trouble to bring together the measurements and proportions of the different specimens which have been described.

He gives an outline of his specimens, and contrasts it "with an outline of Hunter's Piked Whale, drawn according to the measurements given by him;" and he observes, "that the proportions of the body (of these two specimens) vary in a remark-

able manner, not only as to the situation of the umbilicus and other parts, but in the breadth of the tail, the length of the fin and arms. This, however, is what should be expected, supposing Mr. Hunter's to have been a young animal, because such proportional superiority in size of the extremities is characteristic of the earlier periods of life."

In the following table (observes Dr. Jacob), the first column contains the dimensions of each part in feet and inches; the second, the proportion which each measurement bears to the entire length of the animal, which is supposed to be 1000.

	Hunter, 17 ft.		Scoresby, 17 ft. 6 in.		Neils, 43 ft.		Sibbald, 46 ft.		Dr. Jacob, 70 ft.		Sibbald, 78 ft.	
Breadth of tail	5 0	294	4 6	257	10 6	232	9 6	206	14 0	200	18 6	237
Length of arm	2 4	137	2 0	114	5 0	116	5 0	108	7 0	100	10 0	128
Navel to tail	8 0	470	..	..	..	..	..	..	30 0	428		
Anus to tail	4 4	254	..	..	..	..	14 0	304	20 0	285		
Fin to tail	4 9	279	4 6	257	12 0	279	8 6	184	20 0	285		
Gape	3 3	194	3 6	200	14 0	..	10 0	217	15 0	214	13 0	166
Horny plates	0 5	24	0 6	28	1 6	34	..	..	3 0	42	3 0	38
Breadth of fin.....	1 0	58	1 3	71	2 6	58	..	..	2 6	35	2 0	25
Blade-bone to snout..	2 6	147	3 0	171	..	..	6 8	144				
Eye to ear	1 0	58	..	..	..	..	..	..	3 6	50		
Height of fin	..	..	0 9	42	2 6	58	..	..	1 6	21	3 0	38

2. In the 'Zoology of the Erebus and Terror' I gave the following table of the measurements of specimens taken from the various authors cited, in feet and inches:—

	♂ Sibbald.	♂ Ravin.	♂ Schlegel.	♀ Van Breda.	♀ Scoresby.	♀ Hunter.	♀ British Museum.
Length, entire.....	78·0	42·0	40·0	25·0	17·6	17·0	14·0
.... to mouth	..	..	..	4·8	..	3·3	2·8
.... to pectoral	19·7	10 ?	12·0	6·9	5·0	6·0	4·10
.... to navel.....	..	..	21·0	13·7			
.... to genital organ	..	..	25·0	16·3			
.... to vent or front of dorsal.....	62·0	30·0	28·0	18·1	12·6	12·3	9·8
.... of dorsal fin	..	3·0	..	..	1·3	1·0	
.... of pectoral fin ..	10·0	4·4	3·7	3·1	2·0	2·4	1·10
Breadth of pectoral.....	2·6	1·3	..	0·68	0·7	0·9	0·11
.... of tail.....	10·0	8·4	..	..	4·6	5·0	

The older specimens, viz. Sibbald's male, 78, Ravin's, 42, and Schlegel's, 40, and Van Breda of Ostend's female, 82 feet long,

have the pectoral fin about $\frac{1}{4}$ the length from the head, and from $\frac{1}{8}$ to $\frac{1}{10}$ (probably as the inner or outer edge is measured) of the entire length of the body, in lengths, and the dorsal about $\frac{3}{4}$ the entire length from the nose. It would appear as if the middle of the body lengthened more rapidly than the other parts as it grew, at least the young females are shorter in proportion; for Scoresby's female, 17 feet 6 inches, Hunter's, 17 feet, and one I measured at Deptford, now in the British Museum, 14 feet long, have the pectoral rather less than $\frac{1}{3}$ the entire length, and the dorsal and vent only about $\frac{2}{3}$ of the entire length, from the chin, so that the interspace between the pectoral and dorsal must have doubled its length, while those fins retained their original situations with regard to the head and tail.—*Zool. Erebus & Terror*, 18.

Messrs. Knox, having purchased a whale 84 feet long, which was stranded near North Berwick on the 5th of October 1831, and another 10 feet long, taken in the stake nets at Queensferry, Firth of Forth, in February 1834, they determined by anatomical differences that they were distinct species, in a "Catalogue of Anatomical Preparations illustrative of the Whale, by F. J. Knox, Conservator of the Museum in Old Surgeons' Hall," 8vo, Edinburgh, 1838. They distinguished the former by the name of *Balæna maximus borealis*, and the latter as *Balæna minimus borealis*. As no description of the colour of the animal, or any account of the nuchal vertebræ, is given, it is impossible, from their account, to determine the species of the former; but the Catalogue contains some most interesting particulars relative to the anatomy of these animals.

Fortunately the skeleton of the larger whale was purchased by the Town Council of Edinburgh, and is now exhibited in the Zoological Gardens of that city, and, as far as it is possible to examine it at the height at which it is suspended, it is a *Physalus*; and the same as, or very nearly allied to, the species described in this work under the name of *P. antiquorum*. The *B. minimus borealis* appears to be a young specimen of the *B. rostrata* or *Pike Whale* of Hunter. Dr. Knox's drawing of this specimen, as suspended, in the act of swimming, is represented in Jardine's Naturalist's Library.

This was the first time that the *Northern Finners* had been separated on an actual examination and comparison of specimens. But the pamphlet in which these observations were published being a mere guide to the exhibition, has been overlooked, and I could only procure a copy last year after great trouble, and from the family of the authors.

Professor Eschricht of Copenhagen, who has devoted much time to the study of the anatomy and development of the Northern Finners, and has published several papers in the Danish lan-

guage on the subject, in 'Transactions of the Danish Academy' for 1845–46, has kindly translated for me the following passage in his last published paper, as the result of his examinations up to that time :—

"Of all that has been communicated in this chapter, it appears to me to be *proved*, that amongst the *Fin* Whales, at least three different species have their abode in the Northern Seas :—

"I. *In the Group of the Longimana.*

"1. The Greenland *Keporkak*. *B. Boops*, O. Fab. *B. longimana*, Rudolphi.

"II. *In that of the Short-handed.*

"2. The Norwegian *Vaaga kval*, *B. minor*; and

"3. The common great short-handed, *B. Boops*.

"To be *almost proved* that besides there exists,

"4thly, A peculiar large short-handed species, the *Balæno pterus Musculus*.

"And, at least, it is highly probable, that—

"5thly, The Greenlandian *Kepokartrak* is the representative of a particular form; and even that—

"6thly, The Greenlandian *Tikagalik* or *Balæna rostrata*, O. Fab., may be a different species from the Norwegian '*Vaagekval.*'"—*Eschricht, 4th Mem.* p. 157.

In the Appendix to the 'Zoology of the Erebus and Terror,' from observation made during the progress of the work through the press, I remarked, "The account of the genus *Balænoptera*, in the former part of this essay, was only derived from the examination of a single specimen, and the comparison of the descriptions and remarks of preceding authors. Since that time, by the examination of Professor Eschricht's paper, and from personal communication with him, and the examination of the several skeletons of this genus, in different collections, I am satisfied that there are several distinct species which may be thus distinguished."

The examination of the proportions pointed out by the tables above quoted, and the measurement of other specimens, all of which I drew from scale on paper, have shown that they were permanent, and to be considered as specific or generic distinctions rather than variations in the growth of the same species, and these distinctions were further proved by the examination of the skeletons; for it was found that the bones of the neck of the small species, which had been considered to be the young of the larger ones, were anchylosed together, while those of the larger ones were free; and it also showed that the form of the lateral process of the nuchal vertebra was the same in specimens of different sizes from the same locality, showing that the struc-

ture of these bones depended on the mobility of the neck of the different species, fitting it for their different habit and manner of life, indicated by the size of the fins and other external characters.

Professor Eschricht (in *Forhandl. Sekand. Naturf. Kiobenh.* 1847, 8vo, 1849, p. 103) has published a paper on the geographical distribution of some of the Northern Whales, with a map, by which it appears that *Balæna mysticetus* in Baffin's Bay lives from latitude 65° to 69° in December to June, and in July and August ascends to 77°. The *Finnolic* live in 76° in the summer, on the coast, North Greenland, and 69° in South Greenland. The *Keporkak* 76° in North Greenland, and 62° in South Greenland.

The anatomy of these animals, and especially a description of their bones, have been given in *Albers. Anat. Comp.* t. 1; *Camper, Cetacea*, t. 11 and 12; *Rudolphi, Berl. Abhand.* 1820, t. 1–4; *Cuv. Oss. Foss.* v. 564. t. 26. f. 5; *M. Ravin, Ann. Sci. Nat.*; *Van Breda, Van der Linden*, and *J. Dubar*, in separate pamphlets on the specimen cast ashore at Ostend, which was exhibited in London some years ago.

Cuvier (*Oss. Foss.* v. 264) figures the skull of a specimen described by Lacepède, from the Mediterranean, under the name of *Rorqual de la Méditerranée* (t. 26. f. 5), and he gives a copy of the head of the skeleton of *Balæna rostrata* of *Rudolphi, Berlin Abhand.* 1820, t. 1, 2, 3, 4, under the name of *Rorqual du Nord, Oss. Foss.* v. t. 26. f. 6, and points out the differences between them; but the skull of the various specimens which I have examined did not offer any striking characters to separate the species.

Polach (*New Zealand*, ii. 407) describes these whales as having three fins on the back; this is probably only a false translation of Ray's *B. tripennis*, referring to it having a dorsal as well as two pectoral fins.

O. Fabricius (*Fauna Grœnlandica*, 36) describes *B. Boops* with the blower on a common tubercle, and covered by a common valve!

2. Megaptera. Hump-backed Whales.

Head broad, moderate, flattened. Throat and chest with deep longitudinal folds. Dorsal fins low or tuberous, rather behind the middle of the body. The pectoral very large, $\frac{1}{5}$ the entire length of the animal, as long as the head, consisting of only four fingers. The eyes rather above the angle of the mouth. The navel is rather before the front edge, the male organs under the back edge of the dorsal, and the vent rather nearer the tail, and the female organs are rather behind the back edge of the dorsal, with the vent at its hinder end.

Skull:—Nose narrow, broad behind, and contracted in front. Temporal bone broad. Interorbital space wide. Lower jaw much arched.—*Cuv. Oss. Foss.* v. t. 26. f. 1, 3. Cervical vertebræ well developed and separate. The first rib is forked at the end near the vertebra. The baleen is short, broad, triangular, much longer than broad at the base, rapidly attenuated, edged with a series of bristle-like fibres, which become much thicker and more rigid near and at the tip. Rather twisted, especially when dry.

The fœtal specimens exhibit numerous rudimentary teeth in both jaws. These are figured by *Eschricht, Danish Trans.* iv. t. 4. f. *a*, *b*, from specimens 35 and 45 inches long.—Copied *Zool. Erebus and Terror*, t. 30. f. 2–14.

Bunch Whale, *Dudley, Phil. Trans.* xxxii. No. 387, 258.
Humpback Whale, *Whalers, Beale, Hist. Sperm W.* 12.
Balæna nodosa, *Bonnat. Cet.* 5.
Balænoptera, pars, *Lacep.*
Megaptera, *Gray, Zool. Ereb. & Terror*, 16.
Megapteron, *Gray, Zool. Ereb. & Terror*, 51.
Mysticetus, sp. *Wagler, N. S. Amp.* 33. 1840.
Balænoptera, § Boops, *Brandt, Voy. Al. Orient.* 4to, 1845.
? Cyphonotus, *Rafin. Anal. Nat.* 61. 1815 (no character nor type).
Kyphobalæna, *Eschricht, Nord Wallthier.* 1849, fol.
Balænoptera leucopteron. *Lesson, in the Nouv. Tab. Reg. Anim.* 202, *gives this name to "La Hump-back des pêcheurs" of the "Hautes latitudes S."*

The *Bunch* Whales are easily known from the Finners (*Balænoptera*), in being shorter and more robust, the skull nearly ¼ the entire length, the head wider between the eyes, the mouth larger, the lip warty, and the nose large and rounded; the plaits of the belly and throat are broad; the dorsal is more forward, the pectoral larger and narrow, about ⅛ the length of the body, and the tail is wider, and the lobes generally more pointed.

The skull of this genus is intermediate in form between that of *Balæna* and *Balænoptera*.

This kind of whale was noticed by Dudley (*Phil. Trans.* xxxiii. 258). He says, "The *Bunch* or *Hump-backed Whale* has a bunch standing in the place where the fin does in the Fin-back; this bunch is as big as a man's head, and a foot high, shaped like a plug pointing backwards. The bone (whalebone) is not worth much, though somewhat better than the *Fin-back*. His fin (pectoral) is sometimes 18 feet long, and very white. Both *Fin-backs* and *Hump-backs* are shaped in reeves (folds) longitudinally from head to tail, on their belly and sides, as far as their fins, which are about half-way up the sides."

This description is the origin of *Balæna nodosa* of Bonnaterre and other authors. The French authors have evidently not understood the word "reeves," and have therefore arranged these with the smooth-bellied finless whales, and Bonnaterre translates the position of the fins on the sides into "presque au milieu du corps." Dudley, when speaking of the Spermaceti Whale, says, "he has a bunch on his back like a Hump-back," which explains what he means by a bunch.

The *Hump-backs* are well known to the whalers, for Beale says, "The Hump-back Whale possesses, like the Greenland Whale, the baleen, and spouts from the top of the head, yet has a hump not very dissimilar to that of the Sperm Whale," p. 12.

Professor Eschricht, in the *Danish Transactions*, 1846, t. —, has figured the dorsal fin of this genus, and shows that it is more properly a *bunch*, as Dudley calls it, than a fin.

Cuvier (*Oss. Foss.* v. 367) thinks that the Hump-back Whale was probably only a whale of another kind whose fins had been injured, not recognizing in his Cape Rorqual the genus of Whale here noticed.

Olafsen speaks of a whale under the name of *Hnufubakr* (French translation, iii. 22), which is said to have a smooth belly, and a horn instead of a fin on the back; but the account of the animals in this work is evidently only a compilation, and this appears like an incorrect translation of Dudley.

"The Hump-back of the Southern whalers derives its trivial name from an embossed appendage or hump on the posterior part of the back. It has two spiracles or nostrils on the summit of the head, and its mouth is furnished with plates of short whalebone. When seen on the surface of the water it bears a close resemblance to the *Sperm Whale* in colour and the appearance of the hump, as well as in a habit it has of casting its tail vertically in the air; when about to dive, the hump slopes towards the tail in a more oblique manner than does the similar appendage in the Sperm Whale.

"It is seldom molested by whalers, and is never a chief object of their pursuit, although the oil it produces is superior to that from the Right Whale (*Balæna*), and but little inferior to sperm oil.

"It is a species (genus?) frequently seen in the Atlantic and Pacific Oceans, where it occurs in small herds, and seldom at any considerable distance from land, although the vicinity of the most abrupt coast would appear to be its favourite resort. Examples are occasionally seen in the neighbourhood of the islands of the Pacific, and very frequently in the deep water around the island of St. Helena. The highest south latitude in which we noticed the species (genus) was 49°; the highest north latitude 40°, on the western side of the continent of America. Most abundant off the

bold coast of Cape St. Lucas, California."—*Bennett, Whaling Voyage,* ii. 232.

Capt. Sir James Ross observed them as far south as 71° 50′.

Professor Eschricht believes the *Keporkap* of Greenland and the *Bermuda Whale* is the same species, and that it migrates from Greenland to Bermuda, according to the season; and he states that he cannot find any sufficient distinction in the skeleton of the *Cape specimen* in the Paris Museum, to separate it as a species from the Greenland examples.

Schlegel considers *Balæna longimana* of the North Sea, the *Rorqual du Cap,* and the drawing he received from Japan, as all belonging to a single species, though he owns there are differences between them.

I am inclined to doubt these conclusions, and have therefore, until we have more conclusive evidence, considered it advisable to regard them as separate; especially as Cuvier's (*Oss. Foss.* v. 381) description of the union of the lateral processes of the cervical vertebra of the Cape specimen is very different from those of the Greenland specimens in the Museum, received from Professor Eschricht: see *Proc. Zool. Soc.* 1847, 88.

1. Megaptera longimana. Johnston's Hump-backed Whale.

Cervical vertebræ all free.

Black, pectoral fin and beneath white, black varied; lower lip with two series of tubercles; pectoral nearly ⅓ the entire length; dorsal elongate, the front edge over end of pectoral; throat and belly grooved.

Female: upper and lower lip with a series of tubercles; dorsal an obscure protuberance.—*Johnston, l. c.* t. 1.

? Balæna musculus, *Ascan. Icon. Rer. Nat.* iii. t. 26, *cop. Bonnat. Cet. E. M.* t. 371; *Schreb. Saugth.* t. 335.

? Balæna Boops (Keporkak), *O. Fab. Faun. Græn.* 36? not *Linn.*

Keporkak or Balæna Boops, *Eschricht, K. Danske Vind. Selskabs. Afh.* 1845, xi. 239. t. 1 & 3, 4.

Kyphobalæna (Boops), *Eschricht, Nord. Wallthier.* 1849.

Balæna longimana, *Rudolphi, Mem. Acad. Berl.* 1829, 133. t. 12, *mas, cop. Brandt and Ratzeburg,* t. 15. f. 2.

Whale, *Johnston, Trans. Newcastle N. H. Soc.* i. 6. t. 1, female on back.

Megaptera longimana, *Gray, Zool. E. & T.* 17.

Megapteron longimana, *Gray, Zool. E. & T.* 51; *Proc. Zool. Soc.* 1847, 89.

Inhab. North Sea, mouth of the Maese, *Rudolphi.* Newcastle, *Johnston.*

a. Stuffed specimen, young. Greenland. Professor Eschricht's Collection.

Megapteron Boops, *Eschricht*.

b. Skull of adult. Greenland. Professor Eschricht's Collection.

c. Baleen of skull *b*. „ „ „

d. Skeleton. „ „ „

The cervical vertebræ are all free. The second cervical vertebra has two very large, thick, converging lateral processes, as long as half the diameter of the body of the vertebra. The third, fourth, fifth, sixth and seventh have elongated slender superior lateral processes which bend rather downwards, and the sixth and seventh rather forwards. The fourth and fifth have a very short rudimentary inferior lateral process, which is smaller on the left side. The other vertebræ are without any.

The upper part, or the spinous process of the second verrtebra is very large and convex, covering this part of the next vertebra. —*Gray, P. Z. Soc.* 1847, 92.

Dr. Johnston's description chiefly differs from Rudolphi's in both lips having a row of tubercles, and in the dorsal being said to be a small obscure protuberance; but the animal laid on its back, sunk in the sand.

Rudolphi (*Berl. Abhand.* 1829, t. 1, 4) figures the bones of this species, with enlarged details of the skull. They nearly resemble the skull of the Cape Rorqual of Cuvier in form, but the nasal bones are broad and nearly of the same width from the front of the blow-holes to near the tip, where they gradually taper: the temporal appear more quadrangular.

According to Professor Eschricht, this is the most common whale in the Greenland Seas. In the Danish Transactions he has given a figure of this species, and a very detailed account of its anatomy and development, chiefly founded on the examination of the fœtus.

He observes, "This animal is always infested with *Diadema Balænarum*, and with a species of *Otion*, which he regards as new, while the Cirripedes are never found on any species of *Balænoptera*. On the other hand, the *Tubicinella*, *Coronula Balænaris* and *Otions* are often found on the *Balæna Mysticetus* or Right Whale of the Southern Seas: see *Eschricht*, 144.

The following descriptions must be referred to this species with doubt; as both agree with true *Balænopteræ* in the position of the genital organs and vent compared with the dorsal fin, and Fabricius especially says the pectoral fin is composed of five fingers.

Ascanius (*Icon. Rer. Nat.* iii. t. 26) gives a figure of a female Rorqual with a plaited belly, 66 feet long, from the North Sea,

which he thought might be *B. musculus* of Linnæus (it is not well copied by Bonnaterre, *E. M.* t. 3. f. 1, and Schreber, t. 335), which has a large pectoral fin, about $\frac{2}{9}$ the length of the body; but the drawing is not so good as the others in the work, and the fin is so awkwardly applied to the body, that perhaps its size may depend on the incompetence of the artist. The dorsal fin, which is only indicated as if doubtful in the original figure, is continued to the tail, but in Bonnaterre's copy it is represented as of equal authority with the other part.

Fabricius (*Faun. Grœn.* 37), five years after, described a *Balænoptera* under the name of *B. Boops*, Linn., which appears to differ from *B. Physalus*, for he described the "Pinnæ pectorales magnæ, obovato-oblongæ, margine postica integra, regione cubiti parum fractæ, antica autem rotundato-crenatæ." And, he continues, "Ante nares in vertice capitis tres ordines convexitatum circularium, huic forsitan peculiare quid,"—"Pinna dorsalis compressa, basi latior, apice acutiuscula, antice sursum repanda, postice fere perpendicularis," and "Corpus pone pinnam dorsalem incipit carina acuta in pinnam caudalem usque pergens."

Rudolphi, and after him Schlegel, refers *B. Boops*, O. Fabricius, to this species; and Professor Eschricht has no doubt that *Balæna Boops* of O. Fabricius is intended for this species, as it is called *Keporkak* by the Greenlanders. If this is the case, Fabricius's description of the form and position of the dorsal fin, and the position of the sexual organs, is not correct.

Brandt, in the list of Altaian animals (*Voy. Alt. Orient.* 1845, 4to), has adopted this opinion, and formed a section for *Balænoptera longimana*, which he calls *Boops*, merely characterized as "Pectoral elongate."

Schlegel refers the *Rorqualus minor* of Knox to this species, probably misled by the inaccurate figures of this species in Jardine's Nat. Lib. vi. t. 6. See note on this figure under *Balænoptera rostrata*, p. 33.

Schlegel points out that Rudolphi and M. F. Cuvier, in their description of *B. longimana*, have confounded the figure of *Baleine du Cap* and *Rorqual du Cap*, of Cuvier's *Ossemens Fossiles*, together.—*Faun. Japon.* 21, *note.*

2. Megaptera Americana. Bermuda Hump-back.

Black; belly white; head with round tubercles.

Whale (Jubartes?), *Phil. Trans.* i. 11 (1665).
Bunch or Hump-backed Whale of Dudley, *Phil. Trans.* xxxiii. 258.
Balæna nodosa, *Bonnaterre, Cet.* 5, from *Dudley.*
Megaptera Americana, *Gray, Zool. Ereb. & Terror,* 17.

Megapteron Americana, *Gray, Zool. Ereb. & Terror*, 52.
Inhab. Bermuda, March to end of May, then leave.

I have a tracing of the *Bermuda Whale*, but do not know from whence it was derived: it is said to be common in that island. It is very like the figure of *Megaptera longimana*, but the dorsal fin is represented as lower, and the tail wider. This is doubtless the Whale described in *Phil. Trans.* i. 11 and 132, where an account is given of the method of taking it. It is described thus:—"Length of adult 88 feet; the pectoral 26 feet (rather less than $\frac{1}{3}$ the entire length), and the tail 23 feet broad. There are great bends (plaits) underneath from nose to the navel; a fin on the back paved with fat like the caul of a hog; sharp, like the ridge of a house behind; head pretty bluff, full of bumps on both sides; back black, belly white, and dorsal fin behind."

"Upon their fins and tail they have a store of clams or barnacles, upon which he said rock-weeds and sea-tangle did grow a hand long.

"They fed much upon grass growing at the bottom of the sea: in their great bag of maw he found 2 or 3 hogshead of a greenish grassy matter."—*Phil. Trans.* i. 13.

Baleen from Bermuda, called *Bermuda finner*, is extensively imported; it is similar to the baleen of the *Grey Finner*.

3. Megaptera Poeskop. Poeskop, or Cape Hump-back.

Dorsal nearly over the end of the pectoral.
Intermaxillary narrowed and contracted in front.
Temporal bone broad, triangular.
"Second and third cervical vertebræ united by the upper part of their body."—*Cuvier*.

Rorqual du Cap, *Cuv. Oss. Foss.* v. 370. t. 26. f. 1–4. *Skull*, t. 26. f. 19 to 21. *Verteb.* f. 9 & 22. *Fins*, f. 24. *Pelvis*, t. 25. f. 15, *tongue bone, all from Lalande's specimen.*
B. Balænoptera Poeskop, *Desmoulin, Dict. Class. H. N.* ii. 164, *from Lalande's MSS.*
B. Lalandii, *Fischer, Syn.* 525, *from Cuvier.*
B. Capensis, *A. Smith, from Cuvier.*
Megaptera Poeskop, *Gray, Zool. E. & T.* 17.
Rorqual noueux, *Voy. Pol Sud*, t. 24, fem. not described.
Balænoptera leucopteron, *Lesson, N. Tab. Reg. Anim.* 202.
Hump-backed Whales, *Ross, Antarctic Voy.* i. 161, 191; *Mitchell, Trav. Austr.* ii. 241; *Beale, H. Sperm. W.* 12, 30.
Inhab. Cape of Good Hope, *Lalande*; called *Poeskop*. Skeleton, *Mus. Paris.*

Lalande's account was published by Desmoulin, who merely

gives the following particulars, except what appears to be common to the genus. He says, "it has a boss on the occiput, and its dorsal is nearly over the pectoral;" in the European and Bermudean figures it is over the end of these fins.

Cuvier's figures of the adult skull differ from Rudolphi's figure of *M. longimana*, in the intermaxillaries being narrower and contracted in front of the blowers, and then rather widened again and linear, and the temporal bone is broader and more triangular; which makes me believe it is a distinct species.

M. Desmoulin, in describing this species, pointed out the two most important characters of the genus, viz. the length of the pectoral, and their only having four fingers.

4. MEGAPTERA KUZIRA. The KUZIRA.

Dorsal small, and behind the middle of the back; the pectoral fin rather short, and less than $\frac{1}{4}$ the entire length of the body; nose and side of the throat have round warts; belly plaited.

Balæna antarctica, *Temm. Fauna Japon.* 27.
Balænoptera antarctica, *Temm. Faun. Jap.* t. 30, not t. 23.
Megaptera antarctica, *Gray, Zool. Ereb. & Terror*, 17.
Inhab. Japan.

The figure in the 'Fauna Japonica' is from a drawing brought home by M. Siebold, not accompanied by remains. M. Siebold observes that the Japanese distinguish three varieties:—

1. *Sato Kuzira.* Black, nose more elongate and rounded, and the pectoral long; the belly and lower face of the pectoral are grey, with white rays.

2. *Nagasu Kuzira.* Paler, nose more pointed, the belly has 10 plaits. In both, the lower jaw is larger than the upper.

3. *Noso Kuzira.* Distinguished from the first because the back and fins are white-spotted.—*Faun. Jap.* 24.

Forster, in *Cook's Voyage*, appears to have met with a species of this genus between Terra del Fuego and Stratten Island. He says, "These huge animals lay on their backs, and with their long pectoral fins beat the surface of the sea, which caused a great noise, equal to the explosion of a swivel."

Lesson (*Tab. Reg. Anim.* 202) gives the name of *B. leucopteron* to "the Hump-back of the whalers in the high southern latitudes."

Mitchell (*Travels Australia*, ii. 241) speaks of a *Hunch-backed Whale* which inhabits Portland Bay, Australia Felix.

Chamisso figures a species of this genus from the Aleutian seas, under the name of *Aliomoch* or *Aliama*, when young, *Aliamaga dach* (*N. Acta Nat. Cur.* xii. 258. t. 18. f. 5; *Fischer, Syn. Mam.*

527. n. 4), from a wooden model made by the Aleutians: and Pallas (*Zool. Ross. Asiat.* i. 288) calls it *Balæna Allamack*. The pectoral fins are long; they, and the underside of the tail are white.

This genus is also found in the seas of Java, for there is an imperfect skull, brought from that country by Professor Reinwardt, in the Leyden Museum.—*F. Japon.* 24.

Pallas, under the name of *B. Boops*? (*Zool. Ross. Asiat.* 291), describes a whale which appears to belong to this genus, found at Behring's Straits by Steller, when he was shipwrecked. The head was $\frac{1}{4}$, the pectoral fin $\frac{1}{5}$, the entire length, and the vent $\frac{7}{10}$ from the head, as by the following measurement:—length, 50 feet; head, 12 feet; pectoral fin, 10 feet long and 5 feet wide; tail, 16 feet wide, and the vent 35 feet from the head. If these measurements are correct, the pectoral fin is shorter and much wider than they generally are in this genus. The position of the dorsal fin is not noted.

In the *Zoologia Ross. Asiat.* 293, Pallas described a whale under the name of *B. musculus*, observed by Merle at Kamtschatka. It was long and slender, ash-brown, white-clouded above, snow-white beneath, and spotted on the sides. It was 22 feet 6 inches long; the dorsal was 6 feet from the tail, and 1 foot 11 inches high; behind the fin the back was 2-keeled; the pectoral fin was rounded at the end, and 10 feet 7 inches distant from the tip of the beak, 4 feet 2 inches long and 1 foot 2 inches wide: behind the vent, 7 feet before the tail, and 3 feet from the vent, is a white kind of fin, and the genital organs are 1 foot 3 inches before the vent. If this description and these measurements are correct, it must be a most distinct species, if not a peculiar genus: the pectoral fins are nearly in the middle of the body, and I know of no whale with a fin behind the vent beneath, and with the genital organs nearly under the pectorals. The pectoral is almost $\frac{1}{5}$ the entire length.

3. Balænoptera.

Head elongate, flattened. Throat and chest with deep longitudinal folds and very dilatile. The dorsal fins compressed, falcate, $\frac{2}{3}$ the length of the body from the head and behind the line above the orifices of generation. The pectoral fins moderate, $\frac{1}{3}$ the length of the body, $\frac{1}{3}$ the length of the body from the head.

The second and third cervical vertebræ united by the spinous process, rest well-developed and separate. The lateral processes of the second cervical vertebra rather expanded and ring-like.

Vertebræ 46 to 48.

Balænoptera, pars, *Lacepède, Cetac.*
Balænoptera, Sect. 1 (Balænoptera), *Gray, Zool. Ereb. & Ter.* 50.
Balænoptera, *Gray, Proc. Zool. Soc.* 1847, 89.
Pterobalæna, pars, *Eschricht, Nord Wallthier,* 1849, fol.
Balæna, pars, *Linn.; Müller, Zool. Dan.; Illiger, Prod.* 242.
Rorqualus, sp. *Dekay; F. Cuvier, Cetac.* 321.
Balæna minimus, *Knox, Cat. Whale,* 14.

Dr. Knox found eight distinct bristles arranged in perpendicular rows on the extremity of the snout, in each jaw (*Knox, Edin. N. Phil. Journ.* 1834).

Balænoptera rostrata. Pike Whale.

Black, beneath reddish white. Pectoral fin white near the base above.

Balæna rostrata, *Müller, Prod.*; *O. Fab. Faun. Græn.* 40; *Hunter, Phil. Trans.* lxxvii. t. 20–23, cop. *E. M.* t. 4.
Rorqualus rostratus, *Dekay, Zool. New York Mus.* 730. t. 30. f. 1.
B. musculus, pars, *Flem. B. A.* 30.
B. Boops, pars, *Flem. B. A.* 31.
Balænoptera acuto-rostrata, *Lacep. Cetac.*; *Scoresby, Arct. Reg.* i. 485. t. 13. f. 2.
Balœnoptera acuto-rostrata, *Lesson, N. T. R. A.* 202.
Balænoptera microcephala, *Brandt, MSS.*
Balæna minimus borealis, *Knox, Cat. Whale,* 14.
Rorqualus minor, *Knox, Jardine, Nat. Lib.* 142. t. 7.
B. borealis rostrata, *Fischer, Syn.* s. 25.
B. Boops, *Albert. Icon. Anat.* 1822, t. 1; *Camper, Cetac.* 74. t. 11, 12; *Cat. Col. Surg.* 171. n. 1194, *Hunter's spec.?*
Balænoptera Boops, Fin-backed Whale, *Newman, Zoologist,* i. 33, fig.
Rorqualus Boops, *F. Cuv. Cetac.* 321. t. 20.
Balænoptera Physalus, *Gray, Zool. E. & T.* 18.
Vaagekval, *Eschricht, K. D. Vidensk. Selsk.* xi. t. 1, 2, and p. 286–299, *fœtus and anat.*
Balænoptera rostrata, *Gray, Zool. Ereb. & Terror,* 50. t. 2, *skull,* t. 1. f. 3, *baleen*; *Proc. Zool. Soc.* 1847, 90.
Pterobalæna minor, *Eschricht, Nord Wallthier,* 59, 1849.
Inhab. North Sea. New York Bay, *Dekay.* Valognes, France, *Geoffroy.* Greenland. Norway.

a. Stuffed specimen. Young. Thames at Deptford.
b. „ „ Very young. Greenland.
c. *Plates of baleen from *a.* Thames at Deptford.
Figured *Zool. Erebus & Terror,* t. 1. f. 3.
d. Skeleton. South Greenland. From Mr. Brandt's Collection.

The skull figured, *Zool. Erebus and Terror*, t. 2, is 46·6 inches long, 28·0 at the beak, 23·0 inches wide at the orbit, 15·6 at the notch, and 10·6 in the middle of the nose. The nose of the skull is elongate-triangular, with straight, regularly converging sides, not quite twice as long as the width at the notch.

The first cervical vertebra is rather broader than long. The central hole is half as high again as broad. The second and third cervical vertebræ are united together by the upper edge.

The second cervical vertebra has a broad, much-expanded, lateral process, with an oblong central hole near the body of the vertebra, reaching rather more than half its length.

The third, fourth, fifth and sixth cervical vertebræ have two, or upper and lower, lateral processes. The upper process of the third is the shortest and least developed, and they increase in length to the sixth. The lower process of the third is the thickest. The fourth and fifth rather small, and in the sixth the basal part of the process is shorter and the upper part much elongated and thinner.

The seventh is only the upper process, which resembles that of the first dorsal in form, but is smaller.

This species, which is the smallest of the family, scarcely if ever exceeds 25 or 30 feet in length.

The skeleton of the "young *Balæna Boops*" (No. 1194, *Mus. Col. Surg.*), which formed part of the Hunterian collection, and is probably the skeleton of the *B. rostrata* described by John Hunter (as the head is about 4 feet long, which agrees with the measurements of his figure of the animal), belongs to this species.

Dr. Knox examined a *young Rorqual*, 9 feet 11 inches long, 3 feet from snout to ear, and 4 feet 8 inches in girth, at the end of the folds, which was cast ashore near Queensferry, Firth of Forth, in 1834. He considers it quite distinct from the Great Rorqual (*B. Boops*), because it has only 11 dorsal, 36 lumbar, sacral and caudal vertebræ; but he considers it the same as *B. rostrata* of O. Fabricius, Hunter and Scoresby (*Edin. N. Phil. Journ.* 1834, 199). Dr. Knox's specimen is figured by Jardine under the name of the *Lesser Rorqual* (*Nat. Lib.* vi. t. 7). Schlegel (*Fauna Japon.* 24, and *Abhand.* 44) erroneously refers to this figure as a representation of *Balænoptera arctica* (*antarctica*); for though the pectoral in the figures is larger in proportion than they should be for a *Balænoptera*, they are not of the shape of the fins of *Megaptera*; and the artist has made the fins of both the animal and skeleton of the larger Rorquals too large in proportion for the other parts of the body, and perhaps the length of the body is fore-shortened.

Professor Eschricht observes that " the Greenland *Tikagulik*, or *Balæna rostrata* of O. Fabricius, may be distinct from the Norwegian *Vaagekval* or *B. minor*," *4th Mem.* 157. Our Greenland skull does not appear to differ from that of the English skeleton.

4. Physalus.

The head elongate, flattened. The eye is near the angle of the mouth, and the blowers lunate, covered by a valve and separated by a longitudinal groove. The throat and chest with deep longitudinal folds and very dilatile. The dorsal fin compressed, falcate, $\frac{3}{4}$ the length of the body from the nose, behind the line over the orifice of generation. The pectoral moderate, about $\frac{1}{8}$ the length of the body, $\frac{1}{4}$ the length of the body from the nose, of four fingers. The vent under the front of the dorsal fin. Male organs $\frac{2}{3}$ from the chin, in front of line of dorsal; female near vent.

Vertebræ 54 to 64; cervical vertebræ all separate and free.

The skull is broad, depressed; nose broad, gradually tapering, with straight sides, with a narrow interorbital space.—*Cuv. Oss. Foss.* v. 373. t. 26.

The baleen is short, broad, triangular, rather longer than broad at the base, and edged with a series of elongate, unequal, bristle-like fibres, which become much thicker and more rigid near the upper tip. It is internally formed of one or two crowded layers of thick tubular fibres, covered on each side with a thin coat of enamel, which becomes thinner and thinner near the edge, where the fibres are free; always twisted.

These animals are often called *Razor-backs, Piked Whales,* by the sailors.

The *baleen* or fin of the *Finners* is only used to split into false bristles, but for this they are inferior to the Southern or lowest kind of *baleen* of the *Balænæ.*

Balenapterus, sp. *Lacep.*
Balenopterus, sp. *Lacep.*; *F. Cuv. D. S. N.* lxi. 518.
Balænoptera, sp. *Lacep. Cet.*
Balænoptera, Sect. 2 & 3, *Gray, Zool. Ereb. & Terror, App.* 50. 1846.
Pterobalæna, pars, *Eschricht, Nord Wallthier,* 1849.
(Catoptera *or*) Cetoptera, *Rafin. Anal. Nat.* i. 219, 1815.
Mysticetus, sp. *Wagler, N. S. Amph.* 33.
Balæna, sp. *Linn.*; *Illiger, Prod.* 142, 1811.
Physalis, *Fleming, Brit. Anim.* 1828.
Physalus, *Lacep. Cet.*; *Gray, Proc. Zool. Soc.* 1847, 90; *Brandt.*
Physelus, *Rafin. Anal. Nat.* 60, 1815.

Ray calls these *Balæna tripennis*, thus separating them from those which have no dorsal fin; but Polach misunderstood him, and says they have three fins on their back.

Sibbald (*Phalænologia Nova*, 1692) figures two specimens of this genus caught on the coast of Scotland. Ray (*Hist. Piscium*, 17) notices these specimens; and Brisson and Linnæus have regarded them as separate species. Linnæus designated the one with the skin under the throat dilated, *Balæna musculus*, and the other, with this part contracted and flat, *B. Boops*. Now, as I proved by the examination of the specimen we have in the British Museum, when alive, and as M. Ravin observes (*Ann. Sci. Nat.* v. 275), this skin is very dilatable, so that these characters appear to depend on the manner in which the specimen might lie when drawn, and the quantity of gas which might have been produced by the decomposition of the interior. Ray, and after him Brisson and Linnæus, established a third species, *B. Physalus* (*S. N.* i. 186), on the *Fin-fish* of Martens (*Spitz.* 125. t. Q. f. c), copied *E. M.* t. 2. f. 2, which well represents this genus; yet as there are no folds on the belly in the figure, it has been regarded by most authors as distinct from the *B. rostrata* of Müller and Hunter, and the other species of Sibbald; but the name used by Martens being the one now given by the Greenland whalers to these whales, I think at once shows that it properly belongs to this genus: and Martens neither mentions the colour, nor says a word about the belly. Scoresby, who calls the *Fin-fish B. gibbar*, after Bonnaterre, says from report that the "skin is smooth, except about the sides of the thorax, where longitudinal rugæ or sulci occur," which at least must be a *Balænoptera*. Lacepède formed the *Fin-fish* of Martens, the Hunch-back and Scrag Whale of Dudley, into a section, which he calls *Rorqual à ventre lisse*. The Hunch-back has a "reeved" or plaited belly, and the Scrag Whale is shaped like, and doubtless is, a true *Balæna*; yet these species are kept together as a subgenus in Fischer and other modern systematic works: and Dr. Fleming has made Lacepède's section into a genus, under the name of *Physalis*.

The examination of the skeleton has shown that there are several species found in the North Sea characterized by the bones of the neck and by the external colour; and I think there is little doubt that, when we have had an opportunity of comparing the skeletons of the Finner Whales found in the other seas, especially of those in the Southern hemisphere, we shall find that they are perfectly distinct from those here described.

The following synonyma of Northern species of Finners appear to belong to this genus, but it is not possible to apply them with any certainty to the species here described:—

1. Balæna tripennis quæ rostrum acutum habet, *Sibbald, Phalænol.* 29. t. 1. f. D, E, cop. *Bonnat. Cet. E. M.* t. 3. f. 2; *Schreb.* t. 354.
   Pike-headed Whale, *Penn. B. Zool.* iii. 40.
   B. Boops, *Linn. S. N.* i. 106.
   B. borealis *var.* Boops, *Fischer, Syn.* 524.
   Balænoptera jubartes, *Lacep. Cet.* 120. t. 4. f. 1.
   Jupiter-fish, *Anderson, Isl.* 220.
   Pike-headed Mysticete, *Shaw, Zool.* ii. 492. t. 227.

2. Balæna tripennis quæ maxillam inferiorem rotundam, &c., *Sibbald, Phalænol.* 33. t. 3; (*Edit.* 1792), 78. t. 3, cop. *Bonnat. Cet. E. M.* t. 3. f. 1.
   Round-lipped Whale, *Pennant, Quad.* iii. 42.
   B. musculus, *Linn. S. N.* i. 106.
   B. borealis musculus, *Fischer, Syn.* 524.
   Balænoptera rorqual, *Lacep. Cet.* 126. t. 1. f. 3.
   Under-jawed Mysticete, *Shaw, Zool.* ii. 495.

3. Fin-whale, *Neill, Wern. Trans.* i. (1811) 201.
   Balæna sulcata, *Walker, MSS.* ?; *Neill, Wern. Trans.* i. 212.

4. Balæna sulcata arctica, *Schlegel, Verhand. Nederl. Ins.* i. 1828, t. 1, 2; *Abhand.* t. 6.

5. Baleinoptère d'Ostende, *Van der Linden, Baleinoptère Bruxell.* 1828; *Dubar, Osteographia, &c. Brux.* 1828, t. ; *Van Breda en letter bode,* 1827, 341; *Scharff's drawing of Ostend Whale,* t. .
   Great Northern Rorqual, *R. borealis,* " Lesson," *Jardine, Nat. Lib.* 125. t. 5, *from Scharff.*
   B. borealis, *Fischer, Syn.* 524.

6. Balænoptera sulcata, *Jacob, Dublin Journ. Sci.* 1825, 333.

7. Finne Fische, *Egede, Grœnl.* 48 fig.

8. Fin-fisch, *Mart. Spitzb.* 125. t. Q. f. c, cop. Fin-backed Mysticete, *Shaw, Zool.* ii. t. 227; *Ency. Méth.* t. 2. f. 2.
   Balæna Physalus, *Linn. S. N.* i. 106; *Schreb. Saugth.* t. 333, *from Martens,* t. 5. f. 2.
   B. gibbar, *Desm. Mamm.* 528. Balænoptera gibbar, *Lacep. Cet.* 114. t. 1. f. 3, *from Martens.*
   B. edentula, &c., *Ray, Syn.*

9. Balænoptera arctica, *Schlegel, Abhand.* ii. 10. t. 9.

10. Balænoptera Boops, *Yarrell, Proc. Zool. Soc.* 1840, 11. A female, 44 feet long. Pectoral 10¾. Vertebræ 60. Ribs 14.

11. M. Cuvier's *Rorqual de la Méditerranée* is founded on the skull of a whale described by Lacepède (*Cetac.* t. 5–7) which was stranded near the Isle of Marguerite in 1797. Lacepède gives the following measurements: viz. length, 60 feet; length to the pectoral, 14 feet 6 inches; from thence to dorsal, 10 feet 9 inches; and from dorsal to caudal, 8 feet 9 inches: but there must be some mistake, as this makes only 34 feet. The pectoral was 5 feet long, and all black. Cuvier (*Oss. Foss.* t. 26. f. 5) represents the head of this specimen. M. F. Cuvier regards this specimen as the type of his *B. musculus* (*Cetac.* 334).

M. F. Cuvier's *Cetacea* refers to the Mediterranean Rorqual (*B. musculus*), a male whale described by M. Companyo, which was cast ashore near St. Cyprien. It was 25,060 metres (82 feet) entire length; the head 5,038 metres (16 feet); length of pectoral 2,010 (13 feet). It had 7 cervical, 14 dorsal, 15 lumbar, and about 25 caudal vertebræ, in all 61. It was dark grey, with the throat and the sides of the pectoral white, the belly blue and white banded, pectoral greyish. Professor Eschricht belives this to be the species I have named *Physalus antiquorum*. The skeleton was at Lyons in 1835.

M. Van Beneden found by examining an ear-bone brought from Iceland by M. Quoy, that it belonged to the Rorqual de la Méditerranée of Cuvier (see *Ann. Sci. Nat.* n. s. vi. 159).

Albers (*Icon. Anat.* 1822, t. 1) figures, under the name of *Balæna Boops*, the skeleton of a whale cast ashore at Vegisack near Bremen, in 1669. The length was 29 feet; length of pectoral fin 3, width of tail 9. Camper (*Cetac.* 74. t. 11, 12) figures the skull of this specimen. Cuvier says he compared this skull with the one from St. Marguerite's, figured by Lacepède, and could see no difference between them. Albers's figures would lead to the idea that the lower jaw was scarcely wider than the upper; this is corrected by Camper. Professor Eschricht considers Albers's specimen the same as Hunter's *B. rostrata*; but it agrees with the whales of this genus in having 34 and 35 lumbar and caudal vertebræ.

12. Balæna rostrata, *Rudolphi, Berl. Abhand.* 1820, t. 1–4.
Rorqual du Nord, *Cuvier, Oss. Foss.* v. 564. t. 26. f. 6, copied *from Rudolphi.*
Balænoptera laticeps, *Gray, Zool. Ereb. & Terror,* 20, *from Rudolphi.*

Black, beneath white; upper jaws wide, in the skull only twice as long as the width of their base in front of the orbits, the lower ones slightly curved and scarcely wider than the edge of

the upper ones. Pectoral fin $\frac{1}{8}$ the entire length, and rather more than $\frac{1}{3}$, and the dorsal nearly $\frac{3}{4}$, from the nose.

Inhab. North Sea, coast of Holstein, 1819, *Rudolphi*.

The length was 31 feet 1 inch; from nose to the eye, 2 feet 9 inches; to blower, 3 feet 11 inches; to pectoral, 3 feet $6\frac{1}{2}$ inches; to the front of the dorsal, 19 feet 2 inches; to the vent, 21 feet.

Cuvier copies the figure of the head of this whale as that of the Northern Rorqual, and points out its distinctions from that which he had received from the Mediterranean. The nasal bones appear much broader than in the small common Finner, *Balænoptera rostrata*.

13. Balenoptera à bec, *Ravin, Ann. Sci. Nat.* x. 266. t. 11; xv. 337. t. 9, young male.

"Black above, beneath white. Pectoral black. Dorsal and caudal with white scar on the edge. Baleen of the first part of the series white; of the rest blackish blue, the colour changing suddenly from one to the other.

"Inhab. coast of France, Somme. *Ravin*."

M. Ravin (*Ann. Sci. Nat.* n. s. xv. t. 9) figures the skull; but although it generally resembles Cuvier's figure above quoted, it is shorter and broader in proportion, being only twice the length of the width of the jaws in front of the orbit.

14. Pallas, under the name of *B. Physalus* (*Zool. Ross. As.* 290), described a specimen of this genus found in the North Sea in 1740. It was 84 feet long; the pectoral 9, the head 22 feet long, and the tail 14 feet wide. He describes the skin as brown.

* *The transverse apophysis of the cervical vertebræ much expanded, united, forming a ring on the second and sixth vertebræ. Lumbar vertebræ very large and thick.* Physalus.

1. PHYSALUS ANTIQUORUM. The RAZOR BACK.

Slate-grey, beneath whitish. Baleen slate-coloured, under edge blackish, inner edge pale streaked.

Razor-back of the Whalers. "B. Physalus, *Linn.* B. Gibbar, *Lacep.*"—*Scoresby, Arct. Reg.* t. 479.

? Great Northern Rorqual, *Knox*; *Jardine, Nat. Lib.* t. 6, skeleton.

Rorqual de la Méditerranée, *Cuv. Oss. Foss.* v. 370. t. 26. f. 5, skull.

Balæna antiquorum, *Fischer, Syn.* 525.
Balænoptera antiquorum, *Gray, Zool. Ereb. & Terror,* 50.
Physalus antiquorum, *Gray, Proc. Zool. Soc.* 1847, 90.
Balænoptera musculus, *F. Cuv. Cetac.* 335; *Eschricht's MSS.* (not *Linn.*)
? Balein de Sainte Cyprien, *Companyo, Mem.* 4to, 1830; *Carcassonne and Farines, Mem.*; *F. Cuv. l. c.* 337.
? Balænoptera Boops, *Yarrell, Proc. Zool. Soc.* 1840.
Inhab. North Sea. Berwick, 1831, *Dr. King.* Hamburgh, *Rudolphi.* Coast of Hampshire, 1842. Skeleton at Black-gang Chine. Greenland, *Eschricht.* St. Cyprian, in *Mus. Lyons,* 1838.

a. Two plates of baleen. Needles, coast of Hampshire, from the skeleton at Black-gang Chine.

b. Several plates of baleen united together. Greenland, from Mr. Müller's collection.

c. Skeleton, 74½ feet long. Plymouth.

The transverse apophyses are as broad as the body of the vertebra, and the latter is oblong, half as broad again as high.

The lateral processes of the cervical vertebræ are much longer than the width of the body of the vertebræ; the lateral process of the second cervical has a small, nearly central perforation, and this perforation gradually becomes larger on each succeeding vertebra, until it nearly occupies the whole disk of the lateral process in the sixth; the seventh being only formed with a narrow elongated process from the upper edge, the lower process being reduced into the form of a small tubercle.

Vertebræ 54: viz. 7 cervical, 13 dorsal, 17 lumbar and 17 caudal. The ribs are simple.

The lumbar vertebræ are thick and large; both these characters must render this Finner much more powerful and active in the water than any of its allies. The lower jaw is 17 feet long; the blade-bone 32 inches by 51. The upper arm-bone 20 inches long by 10½ wide; the lower arm-bone 31 inches long. The chest-bone is 28 inches wide and 18 inches long.

The lumbar vertebræ are 11 inches long and 14 inches wide: the first rib 59 inches long and 10½ inches wide at the sternal end.

The specimen was found floating on the sea in a decomposed state, on the 2nd of October 1831, in Plymouth Sound, and is said to have been 102 feet long and 75 feet in circumference; but most likely the abdominal cavity was distended by the internal decomposition.

It formerly travelled the country, curiously mounted in three caravans, the first containing the head, the second the thorax,

and the third the middle of the tail; when placed one after the other so as to exhibit the parts of the skeleton in their proper situation, the ends of the caravans were removed, and the cervical vertebræ, the lumbar vertebræ, and the caudal vertebræ were suspended in their proper situation between or beyond the caravans. The proprietor had placed a blade of Greenland whalebone (*Balæna mysticetus*) on one side and several of South Sea whalebone (*Balæna australis*) on the other side of the upper jaw, in the place of the true baleen of *Balænoptera*.

There is a nearly perfect skeleton of this species (which I have lately visited in company with Professor Eschricht) exhibited at Black-gang Chine, the Isle of Wight, which was caught in April 1842, near the Needles. It was, when first found, dark grey above and whitish beneath.

The baleen is slate-coloured with white streaks on the near or inner side; nearly black and with a few darker streaks near the outer or straight side. It was 75 feet long. The skull is 16 feet 7 inches long, 5 feet wide at the notch, and the edge of the beak from the notch is 12 feet long. The lower jaw 16 feet 9 inches; the upper arm-bone 2 feet, and the larger fore-arm-bone is 33 inches long. In this skeleton, the scapula and the chest-bones are wrongly placed, and the bones of the carpus and finger; and the lower processes of the vertebræ, as well as some of the smaller parts of the head, are deficient. There are 7 cervical vertebræ; the first, very broad, with a very large lateral process, on each side pierced with a hole near the body; the second is higher than it; and the three following have a ring-like or pierced lateral process, which Professor Eschricht regards as one of the best characters of the species. There are 14 thoracic vertebræ. The ribs are long; the first simple, shortish and broadish, the rest almost of equal size and length, the last being very nearly as long as the others. The lumbar vertebræ are 15, with considerably thicker bodies than the others. Caudal vertebræ 18, exclusive of those contained in the fin of the tail, which is preserved entire.

Professor Eschricht has two heads of this species at Copenhagen from Greenland. There is a head and some vertebræ at Paris, and some vertebræ at Berlin, and the St. Cyprian specimen, which was at Lyons in 1835.

Dr. Knox, under the name of *Balæna maximus borealis*, Knox, *Cat. Prep. Whales*, p. 5, and *Edin. N. Phil. Journ.* 1833, 181, notices a specimen of a whale found off North Berwick which was 80 feet long, the head 23 feet, and the tail 20 feet wide from tip to tip. He describes it as having 13 dorsal and 43 lumbar, sacral and caudal vertebræ (*Edin. N. Phil. Journ.* 1834, 198).

The skeleton of this whale is now in the Zoological Gardens,

Edinburgh, and is figured in *Jardine's Naturalist's Library*, vi. t. 5.

The baleen is black? Cervical vertebræ separate. Second lateral process very large, third, fourth and fifth large, ringed, sixth very imperfect, upper process elongate, bent down, lower short, rather depressed, seventh upper process elongate, lower wanting. The third and fourth cervical thinnest and of nearly equal thickness, fifth rather thicker, sixth thicker still, seventh thickest, and the thoracic vertebræ becoming gradually thicker. Ribs 15·15, first narrower at the vertebral end, second, third and fourth dilated and produced on the inner side of the vertebral end, rest simple. Chest-bones in three series, first simple, second larger with processes, third cordate with the first pair of ribs on the hinder end. Vertebræ: 10 caudal, 15 with chevron, 17 lumbar, 15 thoracic, 7 cervical.

** *The transverse apophyses of the cervical vertebræ short; of the third, fourth, fifth and sixth, separate at the ends.* Rorqualus.

2. Physalus (Rorqualus) Boops.

The transverse apophysis of the second cervical vertebra thick, short, converging, but separate at the end; of the other cervical vertebræ slender, rather longer, far apart. The upper apophysis of the sixth bent down, rather elongate; the lower one thicker, shorter, and bent up at the end.

Physalus Rorqualus Boops, *Gray, Proc. Zool. Soc.* 1847, 91.
Balænoptera antiquorum junior?, *Cat. Osteol. Spec.* 142.
Inhab. Coast of Wales.

a. Skeleton of animal taken on the coast of Wales, and towed into Liverpool in 1846.

The length is 38 feet; the head is 9 feet long; the vertebræ are 60 in number, and there are 15 pairs of simple ribs.

The cervical vertebræ are all separate, and nearly equally developed; the bodies of the cervical vertebræ are squarish oblong, about $\frac{1}{3}$ broader than high; the spinal canal is oblong depressed, twice as wide as high; the second is twice as thick as the other, with two large, broad, lateral processes, scarcely as long as half the width of the vertebra, coming together at the end, but separate, and leaving an oblong hole between them. The third, fourth, fifth and sixth cervical vertebræ, each with superior and inferior narrow lateral processes, the upper one of the third being the narrowest, and gradually increasing in thickness to the sixth. The lower of the fourth rather the broadest, and of the sixth the thickest and most tapering at the end. The third, fourth, fifth,

sixth and seventh cervical vertebræ have only two rather short processes on each side, the upper process being the most slender, compressed, and bent down, and the lower ones conical, stronger, compressed. The processes of the third vertebra are the thinnest, and they gradually increase in thickness and strength to the seventh or last.

The specimen here described was mentioned in the papers of the day as a *Spermaceti Whale*!

3. Physalus (Rorqualus) Sibbaldii.

The transverse apophyses of the second cervical vertebra rather elongated, united, leaving only a small subcentral hole; of the other cervical vertebræ slender, shorter, and far apart; nearly straight, directed out laterally.

Physalus Rorqualus Sibbaldii, *Gray, Proc. Zool. Soc.* 1847, 92.
Inhab. North Sea. Coast of Yorkshire.

In the Museum of the Hull Literary and Philosophical Society there is a very perfect skeleton of this species taken in the Humber, which is 50 feet long. It has 64 vertebræ, as follows: cervical, 7; thoracic, 16; lumbar and caudal, 41; and the arms or paddles are 6 feet 9 inches long. The ribs 16 pair, all simple. The baleen is black.

This specimen is said to have been eight years old, but on what authority I cannot learn.

I have to thank my friend Mr. Pearsall, the curator of the above museum, for his kindness in sending me detailed drawings, of the natural size, of the cervical vertebræ of this interesting species.

*** *Cervical vertebræ unknown.*

4. Physalus? fasciatus. The Peruvian Finner.

"Lower jaw scarcely longer than the upper; head and back ash-brown; belly whitish; tips of fins and a streak from the eye to the middle of the body white."—*Tschudi.*

Balænoptera, n.s., *Tschudi, Mammal. Consp. Peruana*, 13.
Balænoptera Tschudi, *Reich. Cetac.* 33; *Wiegm. Arch.* 1844, 255.
Inhab. Coast of Peru.

5. Physalus? Iwasi. The Japan Finner.

Black; side white-spotted; belly white.

Balænoptera arctica, *Schlegel, Faun. Japon.* 26.
Inhab. Japan.

A species of this genus is known in Japan under the name of *Iwasi Kuzira*. It is very rare. One was cast ashore in 1760 at

Kii, which was about 25 feet long; black, belly whitish, sides white-spotted. They distinguish it from the other whales by the head being smaller, narrower, and more pointed, and the pectoral shorter. It was driven ashore by the *Sakanata* (grampus). No remains of this species were brought home by M. Siebold. Temminck (*Fauna Japonica*) regards it as identical with the Northern species. It is very desirable that the bones of the Japan and Northern specimens should be accurately compared. It may be observed, that several animals, the Mole and the Badger for example, were formerly said to be like the European species, but recent research has shown they are distinct, and they are now so allowed in the *Fauna Japonica*.

This genus also inhabits the Columbian shores. Lewis and Clarke mention the skeleton of a *Rorqual* found near the Columbia river, 105 feet long.—*Travels*, 422.

Chamisso, in his accounts of the wooden models of whales which were made by the Aleutians, of the species found in their seas, which he deposited in the Berlin Museum, and described and figured in the *N. Acta Nat. Cur.* xii. 212, figures three kinds of this genus, viz. *Abugulich*, t. 16. f. 2; *Mangidach*, t. 16. f. 3; and *Agamachtschich*, t. 18. f. 4, the *B. Agamachschik*, Pallas, *Z. Ross.* t. *a*.

6. PHYSALUS ANTARCTICUS.

Balænoptera antarctica, *Gray, Zool. E. & T.* 51.

There has lately been imported from New Zealand a quantity of finner-fins or baleen which are all yellowish white; this doubtless indicates a different species.

7. PHYSALUS BRASILIENSIS.

Balænoptera Brasiliensis, *Gray, Zool. E. & T.* 51; *Cat. Ost. Spec. App.* 142.

I have also received from Mr. Smith, specimens of what is called in trade *Bahia Finner*. This baleen is black, the fibres on the edge of the larger flakes are purplish brown, and of the smaller or terminal ones paler brown. They are 35 inches long by 11½ inches wide; and the smaller, 10 inches long, and 4 inches wide at the base. This is so different in appearance from the other baleen of this genus, that I propose to call it *Balænoptera Brasiliensis*.

a. Three plates of baleen, "Bahia Finner." Bahia.

**** "*Male organs under the dorsal.*"

8. PHYSALUS? AUSTRALIS. SOUTHERN FINNER.

Balæna Quoyii, *Fischer, Syn.* 526.
B. rostrata australis, *Desmoulin, Dict. Cl. H. N.* ii. 166.

Balænoptera australis, *Gray, Zool. E. & T.* 51.
B. australis, Southern Rorqual or Finback, *Nunn, Narrat. Favourite,* 183. fig.
Inhab. Falkland Islands, *Quoy.*

Desmoulin (*Dict. Class. H. Nat.* i. 164), under the name of *Balæna rostrata australis,* described a whale seen by M. Quoy on the shores of Falkland Islands, which he says was exactly like *B. Physalus.* It was 55 feet long, and the pectoral fin 6 feet 3 inches, that is, about $\frac{1}{8}$ the entire length, the same as in *Balænoptera Physalus*; but he says the dorsal fin was over the male organ, a character which as far as I know is peculiar to the Hump-backed Whale (*Megaptera*), thus presenting a combination of characters, which, if correct, will not only prove it to be a distinct species, but one forming a section by itself.

Lesson (*Tab. Reg. Anim.* i. 202) gives the name of *Balænoptera australis* to the "*Fin-back* of the Whalers of the South Sea." It is most probably intended for this species, as Falkland Islands is given for the habitat; but it may be *Megapteron Poeskop,* or perhaps a confusion of both.

If reliance is to be placed on the wooden models made by the Aleutians, which have been described and figured by Chamisso, and many of them are not bad representations of known genera, there is a genus found at Kamtschatka which has not yet been described. It is called *Balæna Tschiekagluk* by Pallas, *Zool. Ross. Asiat.* i. 289; *Nov. Act. Nat. Cur.* 259. t. 19. f. 6. It has no dorsal fin, and a smooth belly and chest; the upper and lower part of the under portion of the body is slightly keeled, the head rounded, like *Balænoptera,* with the blower on the hinder part of the crown. The lower side of the tail and the pectoral are white.

Fam. 2. CATODONTIDÆ. TOOTHED WHALES.

Head large. Upper jaw toothless; lower jaw with conical teeth fitting into cavities in the edge of the upper one. Blowers united together, with a lunate opening. Skull concave above in front, with a much-elevated frontal ridge behind and on the side of the blowers.

Delphinia Catodonia (pars), *Rafin. Anal. Nat.* 60, 1815.
Cete Carnivora (pars), *Lesson, N. Reg. Anim.* 201.
Physetereæ, *Lesson, N. Reg. Anim.* 201.
Zahnwale (pars), *Oken, Lehrb. Naturg.* 672, 1815.

Synopsis of the Genera.

1. Catodon. Dorsal hump rounded. Blowers on front of truncated head. Skull elongate.

2. Kogia. Dorsal hump ——? Blowers ——? Skull short, broad.

3. Physeter. Dorsal fin falcate. Blower on back of forehead. Skull elongate.

1. Catodon. Spermaceti Whales.

Head truncated and rather compressed in front, with the blowers close together on the front of the upper edge, separated from the head by an indentation. Nose of skull elongate, broad, depressed. Lower jaw shorter than the upper one, very narrow, cylindrical in front, and united by a symphysis for nearly half their length. Back with a roundish tubercle in front, over the eyes, called the "bunch," and a rounded ridge of fat behind, highest in front over the genital organs, called the "hump," and continued in a ridge to the tail. No true dorsal fin. Pectoral broad, truncated. Teeth conical, often worn down. Males larger than the females.

The atlas is distinct; the other cervical vertebræ are soldered together.—*Duvernoy, l. c.* i. 195.

Catodon, *Artedi, Syst.*; *Lacep. Cet.*; *Rafin. Anal. Nat.* 60, 1815; *Oken, Lehrb. Nat.* 678.
Physeter (Catodontes), *Fischer, Syn. Mam.* 517.
Physeter, sp., *Linn.*; *Illiger, Prod.* 143, 1811; *Lesson, N. Reg. Anim.* 201.
Physeter, *Wagler, N. S. Amph.* 33.
Physalus, *Lacep. Cet.* 219. t. 9, from *Anderson, Cacholotte*, t. 4.
Balænoptera (Physalus), *Fischer, Syn. Mam.* 519.
? Notaphrum, *Rafin. Anal. Nat.* 60, 1815 (*no char. nor type*).
Cetus (pars), *Oken, Lehrb. Naturg.* 674.

The teeth in the lower jaw (in young specimens 16 feet long) had not yet come through.—*Jackson, l. c.* 140. Capt. Benjamin Chase states that he has more than once seen teeth of a considerable size in the upper jaw of the adult females, though always covered by the gum. The males, he says, being much larger, are cut up differently, and in such a way as not to expose the teeth.—*Jackson, Boston Mag. N. H.* v. 140.

The upper jaw is not altogether toothless, as usually described. It has on either side a short row of teeth, which for the most part are placed more interior than the depressions which receive the teeth of the lower jaw, though they sometimes also occupy the bottom of these cavities. Their entire length is 3 inches; they are curved backwards and elevated about half an inch above the soft parts, in which they are deeply imbedded, having only a slight attachment to the maxillary bone. In two instances I have found

their number to be 8 on each side. They exist in both sexes of the Sperm Whale; and although visible externally only in the adult, they may be seen in the young animal upon removing the soft parts from the interior of the jaw.—*Bennett, Whaling Voyage*, ii. 163.

There is little external appearance, beyond the size of the individual or the development of its teeth, to distinguish the male from the female. Whalers are inclined to believe that the convex or "hatchet-shaped" snout is characteristic of the male Cachalots, but I do not think that there is sufficient ground for this conclusion.—*Bennett, l. c.* 167.

Sperm whales are infested with small lice (*Larunda Ceti*) and species of barnacles (as *Otion Cuvieri*), which usually adhere in clusters to the integument around the jaws. See *Bennett, l. c.* 169; *Beale, Hist. Sperm W.*

The ordinary food is the cuttle-fish or squid (*Sepia*), many kinds of which are rejected from the stomach of the whale when the latter is attacked by the boats. It is probable they occasionally indulge in other food. In 1835 a School whale rejected from her stomach a bony fish more than a foot long. Some whalers assert that they have seen Cachalots throw up rock-cod, and even sharks.—*Bennett, l. c.* 176.

The habitat of the Sperm Whale is more peculiarly the central and fathomless water of the ocean, or the vicinity of the most abrupt coast. The geographical range of the species (genus?) must be regarded as very extensive, since no part of the aqueous globe, excepting the Polar seas, would appear to be altogether inimical to their habits or free from their visits. It is however in the warmer seas, within or upon the verge of the tropics, that the Cachalot is sought with the greatest success, as in those corresponding to the intertropical coasts of Africa, America, Asia and New Holland, or surrounding the Indian and Polynesian islands, but more especially and uniformly in the "line of currents" which extend from the equator to almost the seventh degree of north and south latitude, both in the western and eastern hemispheres.—*Bennett, l. c.* 182, with map, showing where they occurred during his voyage. They were observed in the Antarctic Seas as high as lat. 71° 50′.—*Ross, Antarctic Voyage*, i. 169, 197.

Capt. Chase states,—They couple in a horizontal position and not upon the side; nor does the female remain supine, but being close to the surface of the water they occasionally turn, so as alternately to bring the top of the head above the water, evidently for the purpose of breathing. The Right Whale breeds at particular seasons, but the Sperm Whale at any season of the year. He has never seen more than a single young one at a time about the old female. Has seen a bucketful of thick rich milk dis-

charged from the mammary gland of a female when cut up, but has never witnessed the young in the act of suckling.—*Jackson, Boston Journ. N. H.* v. 141. He figures the stomach as having three cavities.—*Jackson, l. c.* t. 14.

Clusius erroneously describes the blowers as placed on the head near the back, and Artedi and Linnæus adopt this error in their character of *Physeter macrocephalus*. Anderson (*Iceland*, ii. 186. t. 4) gives a figure of a whale with a truncated head, much resembling the old figures of the Sperm Whale, with the blower on the hinder part of the head, like a *Physeter*. Bonnaterre established on this figure his *Physeter cylindrus*; and Lacepède forms a genus for it, which he calls *Physalus*. The Dutch engraving of the animal described by Clusius shows this to have been a mistake.

The bunch and hump referred to by Beale and the other whalers, appear first to have been described by T. Hasæus of Bremen, in 1723, in a dissertation on the 'Leviathan of Job and the Whale of Jonas;' on "a specimen 70 feet long, with a very large head, the lower jaw 16 feet long, with 52 pointed teeth, with a boss on the back, and another near the tail, which resembles a fin." Cuvier, after quoting this very accurate description, observes, "Mais d'après l'observation fait sur divers dauphins, cette disposition que personne n'a revue pourroit avoir été accidentelle, et alors cet animal n'auroit diffère en rien du Cachalot vulgaire."—*Oss. Foss.* v. 331. Indeed Cuvier's mind appears to have been made up that the Sperm Whale had no hump in the place of the dorsal fin, and he wrongly accuses Bonnaterre of having added a tubercle in his copy of Anderson's figure, which is not in the original (*Oss. Foss.* 332). Anderson, in the description of this animal, says that it has a prominence four feet long and a foot and a half high near its tail, as in his figure. But the fact was that Cuvier erroneously combined the Sperm Whale and the Black-fish (*Physeter*) together; and he could not otherwise reconcile how some authors, as Hasæus, Anderson and Pennant, described the Sperm Whale with a hump; while Sibbald describes the *Physeter*, which Cuvier erroneously considered the same animal, with a dorsal fin, overlooking at the same time the great difference in the form of the head, and in the position of the blower of these two very dissimilar genera.—*Oss. Foss.* 338.

Mr. Bell observes,—"After careful examination of the various accounts which have from time to time been given of whales belonging to this family, called *Spermaceti Whales*, I have found it necessary to adopt an opinion in some measure at variance with those of most previous writers, with regard to the genera and species to which all those accounts and details are to be referred. The conclusion to which I have been led is, first, that the *High-*

finned Cachalot is specifically but not generically distinct from the common one, and that therefore the genus *Catodon* is to be abolished, and the name *Physeter* retained for both species; and secondly, that all the other species which have been distinguished by various naturalists, have been founded upon trifling variations, or upon vague and insufficient data."—*Brit. Quad.* 507. Thus, though Mr. Bell differs from Cuvier in regarding them as distinct species, yet he overlooked Sibbald's figures, for he says there is no figure of the High-finned Cachalot in existence, and keeps it in the genus *Physeter*, which he characterizes as having the "Head enormously large, truncated in front," which is quite unlike the depressed rounded head of the High-finned Cachalot; and he also adopts the mistaken description of the dorsal fin.

Dr. Jackson observes—"The dorsal fin or hump forms a very obtuse angle, and is ill-defined, being (in a space 16 feet long) about 10 inches in length and 2 or 3 inches high;" there being, he further remarks, "also between it and the caudal two or three quite small finlets."—*Boston, Journ. N. H.* v. 137. These latter are, perhaps, what are represented as humps in Quoy's figure of *C. polycyphus*.

The figure of the *Sperm Whale* in *Duhamel, Pes.* iv. t. 15. f. 3, is good for the form and blower, and has the "*taquet*" marked; but a fin has been added below, between the vent and tail, in the position of the anal fins of fishes! in t. 9. f. 1. This author has figured and described *Orca gladiator* for the sperm whale!

Bonnaterre's figure (*E. M.* t. 7. f. 2) of the *Grand Cachalot* taken at Andiene, 1784, and copied by *Lacepède*, t. 10. f. 1, is not so bad for form, but has a fin instead of a hump on the back.

The figure of the *Spermaceti Whale* from the coast of Kent, 1794, in the *Gent. Mag.* t. 1, is very inaccurate, especially respecting the tail.

It is to be remarked that all the older writers only describe this animal as occurring in the Northern seas, and Robertson and Fabricius described it as black when young, becoming whitish below.

All the figures, except Anderson's, are, by the unanimous experience of the whalers, far too long for the thickness; and Anderson's scarcely represents the "bunch" sufficiently prominent, besides having the blower on the wrong part of the head.

Beale (*Nat. Hist. of the Sperm Whale*) says, there is but one species found in the North Sea, North America, New Guinea, Japan or Peru; but this is merely speaking the language of whalers, and by *species* he means, as he does in the other parts of his book, *genus*. I have no doubt, from analogy of other whales, that when we shall have had the opportunity of accurately comparing the bones and the various proportions of the parts of the

Northern and Southern kinds, we shall find them distinct. Wishing to call attention to this subject for future examination, I may observe that Beale (*N. H. Sperm Whale*, 22. f. 1, 14) describes the Southern Sperm Whale as grey. Female one-fifth the size and bulk of the males, more slender and large in proportion. Young black, skin thicker. Varies sometimes black and grey mottled.

Quoy gives an engraving of a drawing of a Sperm Whale, which was given him by an English captain, which is probably the Southern Whale. He calls it *Physeter polycyphus* (and Desmoulin renames it *P. australis*), because its back appears to be broken into a series of humps by cross ridges. In this particular it agrees with the Scrag Whale of Dudley (on which Bonnaterre established his *B. gibbosa*); but it cannot be that animal, as Dudley says it is a Whalebone Whale. Quoy's figure differs from Beale's in being much longer, but, as Beale observes, when speaking of the figures of the Northern kind, this is the common fault of all the drawings of the Sperm Whales.

Beale (*Hist. Sperm. Whale*, 8vo, 1839) and Bennett (*Narrat. Whaling Voyage*, 1840, 8vo, ii. 153) give a long account of the habits, the mode of catching, &c. of the South Sea Sperm Whale.

Colnet, in his *Voyage*, p. 80. f. 9 (copied by Brandt and Ratzeburg, t. 14. f. 3) gives a very good figure of a Sperm Whale, 15 feet long, from measurements; with details of the manner of flenching or peeling it. It agrees with Beale's in proportions. It was caught in the North Pacific, near Point Angles, on the coast of Mexico. This figure escaped Cuvier's researches.

Purchas says the Sperm Whale is found at Bermuda, where it is called *Trumpo*, a name which Lacepède applied to the northern animal. An anonymous writer in the *Phil. Trans.* i. 132, and Dudley, describe them as found on the east coast of North America.

The Japanese distinguish three varieties of this animal, according to their size. They live in herds on the Japanese coast.—*Faun. Japon.*

Owing to the great projection of the snout beyond the lower jaw, it may be requisite for this whale to turn on its side or back to seize its more bulky prey. When the animal attacks a boat with its mouth it invariably assumes a reversed posture, carrying the lower jaw above the object it is attempting to bite.—*Bennett, l. c.* 176; see also *Beale, Hist. Sperm Whale*, 159, and fig. at 154.

1. CATODON MACROCEPHALUS. NORTHERN SPERM WHALE.

Black, becoming whitish below.

Trumpo, *Phil. Trans.* i. 132.
Physeter Trumpo, *Bonnat. Cet.* 14. t. 8; *Fischer, Syn. Mam.* 518.

Catodon trumpo, *Gerard, Dict. Sci. Nat.* vi. 57 ; *Lacep. Cet.* 212. t. 10. f. 2.

De Balæna macrocephala quæ binas tantum pinnas laterales habet, *Sibbald, Phal.* 12.

Balæna major in inferiore tantum maxilla dentata macrocephala bipinnis, *Raii Pisc.* 15.

Cetus bipinnis supra niger, &c., *Brisson, Cete,* 357.

Catodon fistula in cervice, *Arted. Syn.*

Catodon macrocephalus, *Lacep. Cet.* t. 10. f. 1.

Sperm Whale, *Anderson, Cambridge Phil. Trans.* ii. 250; *Jackson, Boston Journ. N. H.* v. 137. t. 14, stomach.

Spermaceti Whale, *Dudley, Phil. Trans.* xxxii. 258; *Gent. Mag.* 1794, 33. t. 1.

Blunt-head Cachalot, *Robertson, Phil. Trans.* lx. t.

Physeter Catodon, *O. Fab.* 44, *and Robertson,* not *Linn.*

Ph. Trumpo, *Bonnat. Cetac.* t. 8. f. 1, *from Robertson,* copied *Reichenb. Cetac.* t. 4. f. 12; *Anat.* t. 10.

Physeter macrocephalus, *Linn. S. N.* i. 107; *O. Fab. F. Græn.* 41; *Shaw, Zool.* ii. 497. t. 228; *Reichenb. Cetac.* 4. t. 4. f. 11.

Cetus macrocephalus, *Oken. Lehrb. Nat.* 675.

Physeter gibbus, *Schreb.* t. 338; *Johnston, Pisc.* 215. t. 41. f. 1, 2, *Supp.* t. 42, copied *Brandt & Ratz. Med. Zool.* t. 12. f. 20; *Willoughb. Ichth.* t. A 1. f. 3.

Inhab. North Sea. Teignmouth, *Gesner,* 1532. Whitstable Bay, 1794. Scotland, *Sibbald, Robertson.* Greenland, *O. Fab.* &c. New England, nine months of the year, *Phil. Trans.* i. 132, *Dudley.*

a. Skull. North Sea.

Length, entire	179	inches.
Length of beak	127	„
Width at notch	67	„
Width at middle of beak	52	„

The beak is not quite twice the length of the breadth at the notch, and more than $\frac{2}{3}$ the length of the entire head.

This specimen is figured, *Cuv. Oss. Foss.* v. 6. 24. fig. 1–5.

b. Lower jaw. Indian Seas. Presented by Col. Cobb.

c. Lower jaw of young.

d. Lower jaw bent and distorted in front.

	b. in.	*c*. in.	*d*. in.
Entire length	157	92	51
Length of teeth-groove	...	...	29
Length of symphysis	85	44	$21\frac{1}{4}$
Teeth on each side	23	21	19
Width at condyle	...	...	31

The lower jaw appears to increase in length in front, for in the older specimens the symphysis is more, and in the younger ones less, than half the entire length of the jaw.

e. Ear bones. Presented by H. H. Russell, Esq.
f, *g*. Teeth, various.
h. Section of a tooth.

There is the skull of a very young specimen, probably a fœtus of this animal, in the Museum of the College of Surgeons: the bones are of a very soft structure. The following are its measurements:—

Length, entire	32 inches.
Length of nose	20 „
Length of lower jaw	28 „
Length of symphysis	9·6 „
Width at notch of nose	12·6 „
Width of condyles apart	16·6 „

Camper (*Cetac.* t. 17, 20–22, from the church of Scherclinge, t. 18, 19, 27, *Mus. Paris*) figured the skull of this whale. He represents the nose of the skull as nearly twice and a half as long as the width at the notch.

The following table exhibits the measurements of the lower jaw of 9 specimens, all taken on the coast east of America.

No.	Length, entire. ft.	in.	From back teeth to articular surface. ft.	in.	Number of teeth.
1.	16	3	5	6	25·24, New Bedford.
2.	15	7	5	6	25·27
3.	8	5	3	9	20 — (none).
4.	7	10	3	2	26·23
5.	5	8	.....		23? 23? all pointed.
6.	5	3	2	9	25·24
7.	15	0	4	9	26·25
8.	7	6	3	2	24·24
9.	8	2	3	8	23

Jackson, Boston Journ. N. H. v. 153.

The young is quite black; remarkably smooth and elastic, like India rubber; from a line with the anterior extremity of the head to the top of the tail, 16 feet; to the rudimentary dorsal fin, 9 feet; to the anterior fin, about 4 feet; to the vent, 10 feet 2 inches; to the eyes, 3 feet 2 inches; to the external orifice of ears (which was about the size of a goose-quill), 3 feet 8 inches; to the angle of the mouth, 2 feet 10 inches; vertical diameter of the head, just in front of the opening of the mouth, 2 feet 10 inches;

of the largest part of the body, 3 feet; anterior fin 18 inches long and 9 inches wide. The dorsal fin or hump forms a very obtuse angle, and is ill-defined, being about 10 inches in length and 2 or 3 inches in height; *there being also between it and the caudal two or three quite small finlets.* Span of tail 1 foot 7 inches, and 4 inches wide midway. Lower jaw to angle of mouth, 1 foot 8 inches; right eye, $1\frac{1}{2}$ inch long. Circumference of the body, 9 feet.—*Jackson, Boston Journ. N. H.* v. 139.

Twelve males were caught at Walderwich, Suffolk, Feb. 1788. The largest was 62 feet long, and the lower jaw 14 feet.—*Phil. Trans.*

There is a skeleton of an adult at Burton-Constable Castle, near Hull, Yorkshire. Described by *Beale*, 77.

2. Catodon Colneti. Mexican Sperm Whale.

Sperm Whale, *Colnet, Voyage*, 80. f. 9; *Beale, N. H. Sperm Whale*, 22. f. 1–14.
Physeter macrocephalus, *Brandt & Ratzeburg, Med. Zool.* t. 14. f. 3, *from Colnet.*
Spermaceti Whale, *Nunn, Narrat. Favourite*, 40, 58 (*fig. not good*), 175; *Fauna Japonica*?
Inhab. North Pacific. Japan. South Seas, *Nunn.* "Equatoreal oceans," *Lesson.*

3. Catodon polycyphus. South Sea Sperm Whale.

Physeter polycyphus, *Quoy & Gaim. Zool. Uran. Mam.* t. 12, cop. *Richb. Cetac.* 5. t. 5. f. 13.
Physeter australis asiaticus, *Desmoulin, Dict. Class. H. N.* ii. 618; *Fischer, Syn.* 518, from *Quoy.*
Catodon polyscyphus, *Lesson, Mamm.* 422.
Cachalot, or Sperm Whale, *Bennett, Whaling Voyage*, ii. 153, fig.
Inhab. Molucca.

The number of the teeth varies greatly in different individuals, and does not appear to be influenced by either age, sex, or size. Amongst many Cachalots, I find their variations in number to be as follows:—21 on one side of the jaw, 20 on the opposite; 23–21, 22–22, 24–25, 22–23, 24–26, 23–24, 22–24, 19–20. Length of males, 60 to 76 feet; of female, 30 to 35 feet. Fœtus, 14 feet long and 6 feet in girth.—*Bennett, l. c.* 154.

M. de Blainville described what he considered as two varieties, observed in the lower jaws:—the first, from Cape Horn, has long, slender, cylindrical, rather acute teeth, and the symphysis to the 20th tooth; figured *Cuv. Oss. Foss.* v. t. 24. f. 8; the second with 25 or 27 blunt and vertical teeth on each side; the symphysis to the 18th tooth.—*Ann. Anat. & Phys.* ii. 335, 336.

2. Kogia. Short-headed Whales.

Head moderate, broad, triangular. Lower jaw wide behind, slender, united by a short symphysis in front. Jaw-bone of skull broad, triangular, as broad as long.

This genus is intermediate between *Catodon* and *Delphinus*.

The skull is quite distinct from the skull of the young Sperm Whale. The entire animal has not been observed.

Physeter, sp. *Blainv. Ann. Anat. et Phys.* iii.; *Lesson, N. Reg. Anim.* 201.
Kogia, *Gray, Zool. Erebus & Terror*, 22.

1. Kogia breviceps. The Short-headed Whale.

Skull very broad and high, the frontal crest very distinct, and the nasal pit very deep, rather like that of the Cachalot. Nose very short and pointed, very rapidly tapering, only 1 inch longer than the breadth of the occipital bone. The lower jaw is very wide apart at the condyles, bent sharply inwards, and united in front by a moderate symphysis, and very narrow but rounded at the end. Teeth 14 or 15, narrow, slender, conical, acute, and rather arched inwardly.

Physeter breviceps, *Blainv. Ann. Anat. et Phys.* iii. 1838, 337. t. 15; *Lesson, N. Reg. Anim.* 201.
Kogia breviceps, *Gray, Zool. Ereb. & Terror*, 22.
Inhab. Cape of Good Hope, *Mus. Paris.*

Described from a single skull in the Paris Museum. Length of the skull 14 inches 6 lines. Lower jaw 13 inches, separation at the condyles 12 inches, symphysis about $\frac{2}{9}$ of the length of the lower jaw. Beak the length of the width at the notch.

3. Physeter.

"Head rounded, convex above; upper jaw longest; the blowers on the middle of the top of the head, separate, covered with one flap; pectoral fin moderate, triangular; dorsal fin high, falcate; teeth conical, compressed; the male organ under the front edge of the dorsal, and the vent nearly under its hinder edge."—*Sibbald.*

Physeter, sp. *Linn.*; *Artedi*; *Illiger, Prod.* 143, 1811.
Physeter, *Rafin. Anal. Nat.* 1815, 60.
Tursio, *Fleming, Phil. Zool.* 211, 1822 (*P. microps*).
Cetus (Ruckenfinne), *Oken, Lehrb. Nat.* 676.
? Orthodon, *Rafin. Anal. Nat.* 60, 1815 (no char. nor type).
Physeteres, *Lacep.*; *F. Cuv. D. S. N.* lix. 318.

According to Sibbald they produce spermaceti. Cuvier, in his 'History and Examination of the Synonyma of the Cachalots or Sperm Whales' (*Oss. Foss.* v. 328, 338), regards the description of this animal given by Sibbald as merely a redescription of the Sperm Whale, and finds great fault with Artedi, Bonnaterre, and others, for having considered them as separate; and he regards the second blunt-toothed specimen as either a *Delphinus globiceps* or a *D. Tursio* which had lost its upper teeth; this error is important, as it vitiates many of his subsequent observations. To have come to these conclusions he must have overlooked Sibbald's figure and ample details of the first, and the figure of the teeth of the second, or they would have at once shown him his error. That he did so is certain; for when he comes to Schreber's reduced copy of Sibbald's figures of *Balæna microcephala* (p. 337), he says Schreber does not indicate its origin; but on this copy of Sibbald's figure, which he before regarded as a Sperm Whale, he observes, that "from the form of its lower jaw it most resembles a large dolphin which had lost its upper teeth."

Thus, while Cuvier was reducing the numerous species of Sperm Whales that had been made by Bonnaterre, Lacepède, and other compiling French authors, to a single species, he has inadvertently confounded with it the very distinct genus of Black-fish, or *Physeter* of Artedi, which has a very differently formed head, the top of the head being flattened, and with the blowers on the hinder part of its crown, and with a distinct dorsal fin, particulars all well described by Sibbald, a most accurate observer and conscientious recorder, and not badly represented by Bayer.

Some parts of Sibbald's description, and his reference to Johnston's figure, might lead to this error; but his figures, which exactly agree in proportion with his description, though not referred to in the text, at once set this at rest, the drawing being $\frac{1}{72}$ of the natural size, that is to say, 6 feet to an inch; and he observes that his animal is longer and more slender than Willoughby's figure of the Sperm Whale.

Sibbald describes the comparatively small triangular dorsal to be erect, like a "Mizam mast," which Artedi and Linnæus translate *pinna altissima*, and cause Shaw to call it the High-finned Cachalot. Dr. Fleming by mistake calls this species the Spermaceti Whale (*Brit. A.* 38); and he refers to *P. macrocephalus* (Linn.) as the true Sperm Whale figured by Robertson. Sibbald, in speaking of another specimen, says, "*spinam dorso longam*," as correctly quoted by Artedi and Linnæus, but used by them in opposition to the *altissima* of their other species.

J. Bayer (*Act. Nat. Cur.* 1733, III. t. 1) gives a rather fanciful but very recognizable figure of a male specimen of this

genus, which was thrown ashore at Nice, on the 10th of Nov. 1736, where it is called *Mular*. He compared it with Clusius' description of the *Sperm Whale* which was stranded on the coast of Holland, and observes that it has a dorsal fin, very small pectorals, and other characters not noticed by Clusius; and he says it agrees in all points with the whale noticed by Ray (*Syn. Pisc.* 14), which is extracted from Sibbald as above quoted.

F. Cuvier, overlooking the reference to Clusius and Ray, and the characters, speaks thus of Bayer's figure, "Elle est en effet d'un Cachalot; mais elle le rend de la manière la moins fidèle." —*Cetac.* 267.

Duhamel (*Pech.* iv. t. 9. f. 2) figured a whale from the "River Gabon" in Guinea, with teeth in the lower jaw, a dorsal on the hinder part of the back, and the blowers in the crown, as in this genus; but the jaws are equal, and the mouth bent up at the angles to the eyes. He says it is called *Grampus* by the English.

There is an etching of Van den Veld, of a "Pot Walwesk op Noortwijek op Zee, 28 Dec. 1614," which I think represents this species.

Beale (*History of Sperm Whale*, 11) observes, "Others of the Whale tribe have dorsal fins while they possess the cylindrical jaw (like the Sperm Whale), as the *Black-fish*, but yet spout from the forehead or top of the head, and do not produce spermaceti." It is doubtful if this is not derived from Sibbald, for it can scarcely refer to the *Globiocephalus macrorhynchus*, which according to Bennett, Nunn and others, is called the *Black-fish* by South Sea whalers.

I formerly thought that the *Aidluik* of O. Fabricius was identical with the *Balæna microcephala* of Sibbald, but Professor Eschricht observes, that it is most important, in the determination of O. Fabricius' synonyma, to attend to the Greenlanders' names, as they are most accurate *cetologists*; he observes (on the authority of Capt. Holbroll), "that two of the animals which Fabricius referred to *Physeter*, viz. 1st, the 'Pernak,' which he called *P. Catodon*, is probably, and 2nd, the 'Aidluik,' called by him *P. microps* (which Cuvier has thought might be *D. globiceps*), is certainly, the Northern Sword-fish, *Delphinus Orca*." —*Kong. Danske Afhandl.* xi. 136.

Fabricius' description of the 'Aidluik' will do for *Orca gladiator*; except that he calls it black, and does not mention the very remarkable white marks of that species, and he only described the lower jaw as toothed. Now the upper teeth of *Orca* are not deciduous. It is more probably a *Grampus*. As far as I can translate the Danish, it appears that the Black-fish or *Balæna microcephala* of Sibbald, which I thought might be *Aidluik*, has entirely escaped the notice of Professor Eschricht.

1. PHYSETER TURSIO. The BLACK-FISH.

Black. Teeth 11 to 22 on each side, conical, compressed; head nearly $\frac{1}{4}$, pectoral fin $\frac{1}{13}$ the entire length; the length 50–60 feet.

1. De Balæna macrocephala quæ tertiam in dorso pinnam sive spinam habet et dentes in maxilla inferiores arcuatos falciformes.—*Sibbald, Phal.* t. 1. f. A, B, C; hence
Balæna major inferiore tantum maxilla dentata dentibus arcuatis falciformibus pinnam s. spinam in dorso habet.—*Raii Pisces*, 15.
Cetus tripinnis dentibus arcuatis falciformibus, *Brisson, R.A.* 229.
Physeter microps, *Artedi, Syn.*; *Linn. S.N.* i. 107; *Schreber, Saugth.* t. 339; *Anderson, Iceland*, 248, fig. from *Sibbald.*
Physeter macrocephalus, *Cuvier, Oss. Foss.* v. 331, 334.
Tursio microps, *Fleming, Phil. Zool.* 211.

2. Balæna macrocephala tripinna quæ in mandibula inferiore dentes habet minus inflexos et in planum desinentes.—*Sibbald, Phal.* t. 2. f. 1, 2, 4, 5, teeth; *Raii Pisc.* 16.
Cetus tripinnis dentibus in planum desinentibus, *Brisson, R. A.* 230.
Physeter Tursio, *Artedi, Syn.*; *Linn. S. N.* i. 107.
Delphinus globiceps? or D. Grampus? *Cuv. Oss. Foss.* v. 331, 334.

3. Mular, *Bayer, Act. Nat. Cur.* 111. t. 1, male; hence
Ph. Mular, *Bonnat. Cet.* 17.
Ph. Orthodon, *Lacep. Cet.* 236, from *Anderson*, 246.
Delphinus Bayeri, *Risso, Eur. Merid.* iii.; *F. Cuv. Cetac.* 224, from *Bayer.*
Inhab. North Sea. Scotland, *Sibbald.* Nice, *Bayer.*

Sibbald observes that "the superior part of the body was swelled to a prodigious size. In length it was 52 or 53 feet, its height 12 feet, its girth above 32 feet. Its head was so large that it was (the tail being removed) half the length of the whole body. In form it was oblong-round, somewhat compressed at the upper part; inferior part of rostrum beyond lower jaw $2\frac{1}{2}$ feet, the superior part nearly 5. Lower jaw 10 feet long. The extreme part of the rostrum was distant 12 feet from the eyes, which were very small for the size of the head, about the size of those of the haddock. A little above the middle of the rostrum is a lobe, which is called the 'lum,' with two entrances covered with one operculum, called the 'flap.' The size of the cranium may be estimated by the fact that four men were seen inside it at one time, extracting the brain, which contained several cells or al-

veoli, like those which bees keep their honey in, and in these were round masses of a white substance, which, upon examination, were proved to be sperm. Some of this substance was also found externally on the head, in some parts to the thickness of 2 feet. In the superior jaw were 42 alveoli, hollowed out for receiving the teeth of the lower jaw; they were of a cartilaginous nature. In the inferior mandible there were 42 teeth, 21 on each side, all of the same form, which was like that of a sickle, round and a little compressed, thicker and more arched in the middle, and gradually becoming thinner, terminating superiorly in an acute cone turning inwards; inferiorly it becomes thinner, and terminates in a more slender root, which is narrower in the middle. Of these teeth those in the middle of the jaw are larger and heavier, those external are smaller. One of the larger, 9 inches long, weighed 18½ oz., and at the thickest end was of the same length as breadth. The smallest tooth which I got was 7 inches long and 5 in girth. The osseous part of these teeth projected 3 inches beyond the gums, was like polished ivory, smooth and white; the fang of each tooth was provided with a large cavity, which was so constructed that in the larger teeth there was a cavity 3 inches deep. It had two lateral fins, each about 4 feet long, and besides these a long fin on the back. Colour of skin black. The throat was observed to be larger than usual in whales. Only one stomach was found."

The two individuals seen by Sibbald have been divided into two species, according to the more or less truncated state of the teeth.

In the Catalogue of the Museum of the College of Surgeons, the truncated Whale's-teeth are called "the teeth of the High-finned Cachalot, *P. Tursio*?" p. 171, n. 1189–1194. And the small jaws of the Sperm Whale are called "the Lesser Cachalot (*Physeter Catodon*, Linn.)."

See also *Physeter sulcatus* (*Lacep. Mem. Mus.* iv. 475), from a Japanese drawing, with the dorsal fin over the pectoral and the jaws grooved.

Fam. 3. DELPHINIDÆ. DOLPHINS.

Head moderate. Teeth in both jaws, rarely rudimentary and early deciduous. Blowers united together, forming a single transverse or lunate opening on the crown of the head.

Diodonea and Delphinia (pars), *Rafin. Anal. Nat.* 1815, 60.
Cete, Carnivora, pars, *Lesson, N. Reg. Anim.* 197.
Hydraula, *Ch. Bonap. Reg. Anim.*
Delphinusideæ, *Lesson, N. Reg. Anim.* 197.

Delphinus, *Linn.*; *Illiger*, *Prod.* 143, 1811.
Delphinus and Monodon, *Cuv. Tab. Elem.* 1798.
Delphinidæ, *Gray*, *Ann. Phil.* 1828; *Spic. Zool.* i. 1828; *Cat. Mam. B.M.* 104; *Zool. Erebus & Terror.*
Delphinidæ and Monodontidæ, *Gray*, *L. Med. Rep.* xv. 310, 1821.
Cete, pars, *Illiger*.
Delphinidæ, Delphinina and Monodontina, *Selys Longchamps*, 1842.
Les Cétacés piscivores et les Narwals, *F. Cuv. D. S. N.* 1829.
Zahnwale, pars, *Oken*, *Lehrb. Naturg.* 672, 1815.

This family is easily known from the Toothed Whales, or *Catodontidæ*, by the smaller and more proportionate head; and in those species which have lost their upper teeth at an early age, by there being no regular series of pits in the gum of the upper jaw for the reception of the teeth of the lower one; and also by the hinder part of the skull not being deeply concave, and surrounded on the sides and behind by a high ridge.

These animals when first born are large compared with the size of the parents (according to Dr. Knox, the fœtus of the porpesse is half the length, that is, one-fourth the size of the parent before it is born (*Trans. Roy. Soc. Edin.* ii. 208); and they appear to attain their full size very rapidly, which may account for the very slight difference to be observed in the size of the skull, and the great uniformity in the number, and in the space which the series of teeth occupy upon the edge of the jaws in the different specimens of the same species. Hunter thought the exact number of teeth in any species was uncertain: observing the teeth in the middle of each series were the largest and the most firmly fixed, he states his belief that "the jaws increase posteriorly and decay at the symphysis, and while the growth is going on, there is a constant succession of new teeth, by which means the new-formed teeth are proportioned to the jaw."—*Phil. Trans.* 1788, 398. Dr. Fleming, from the examination of the jaws of two porpesses of different ages, thinks "the jaws lengthen at the symphysis and at the base;" and that "the new teeth formed at these places are the smallest, and that there is no absorption."—*Fleming*, *Phil. Zool.* ii. 208. This may be the case with the specimens before they arrive at their full size; but no skull of this kind has fallen under my observation: and as far as my experience will carry me, the numbers, size, and disposition of the teeth furnish the most important characters for the determination of the species and the definition of genera. M. F. Cuvier's remarks (*Cetac.* 103, 104) on the teeth as the characters of genera are not consistent with my observations, for they appear quite as characteristic of the different genera as those of other orders of Mam-

malia, though they do not present so many different forms. At the same time, it is true, that compilers like Lesson, who appear not to have examined a single skull, have made many genera, founded on very slight characters, and bring together species that have very little relation to each other.

For the purpose of more distinctly defining the species, it has been found necessary to divide them into several groups, so as to arrange them into what appears to be a more natural series, and circumscribe the genera.

Synopsis of the Subfamilies and Genera.

A. *Jaws tapering, the symphysis of the lower jaw short, not half the length of the jaw. Dorsal fin generally distinct. Pectoral fin ovate acute.* Marine.

a. *Upper jaw toothless, lower jaw with only one or two teeth (which are often hidden in the gums) on each side. Beak of the skull keeled on each side, the keel being sometimes large, and forming a kind of reflexed wing on each side. Head with a short beak.* Hyperoodontina.

1. Hyperoodon. The beak of the upper jaw with a large erect wing-like expansion in front of the blowers; lower jaw with two rudimentary teeth in front.

2. Ziphius. Beak of upper jaw keeled on each side; lower jaw broad, bent down in front, with large compressed teeth in the middle of each side.

3. Delphinorhynchus. Beak of upper jaw keeled on each side; lower jaw nearly straight, with two or three small, rudimentary, conical teeth in the middle of each side.

b. *Upper and lower jaw with few or deciduous teeth. Wings of the maxillary bones expanded and shelving downwards. The beak short, deflexed. Forehead convex. Head rounded, without any beak.* Monoceratina.

* *Lower jaw toothless.*

4. Monodon. Upper jaw of males with one or two very long, projecting, spirally twisted tusks. Dorsal none.

** *Upper and lower jaw with conical, early deciduous teeth.*

5. Beluga. Dorsal fin none.

**** Upper and lower jaw with compressed, permanent teeth.*

6. Neomeris. Dorsal none.
7. Phocæna. Dorsal triangular, in the middle of the back.

c. Upper and lower jaw with many teeth, rarely deciduous with age. Wings of the jaw-bone horizontally produced over the orbits. Delphinina.

** Head rounded in front, not beaked. Nose of skull scarcely so long as the brain-cavity. Dorsal distinct.*

8. Grampus. Teeth conical, truncated, early deciduous. Intermaxillaries broad. Pectoral ovate.
9. Globiocephalus. Teeth conical, deciduous when old. Intermaxillaries very broad. Pectorals narrow, linear.
10. Orca. Teeth conical, acute, permanent. Intermaxillaries moderate. Pectorals ovate.

*** Head beaked. Nose of skull as long as or longer than the brain-cavity.*

11. Lagenorhynchus. Head shelving in front. Dorsal rather posterior. Nose of skull depressed, expanded.
12. Delphinapterus. Head rather convex in front. Dorsal none. Nose of skull rather depressed, convex above.
13. Delphinus. Head rather convex in front. Dorsal medial. Nose of skull rather depressed, convex above.
14. Steno. Head rather convex in front. Dorsal medial. Nose of skull compressed, higher than broad. Symphysis of lower jaws rather elongate.
15. Pontoporia. Head rather convex in front. Dorsal medial. Nose of skull rather compressed: high symphysis of lower jaw very long.

b. Jaws much compressed. Symphysis of the lower jaw very long. Dorsal none. Teeth in both jaws. Fluviatile.

d. Skull with the maxillary bones simple, expanded over the orbit. Teeth conical. Paddles ovate or oblong. Iniana.

16. Inia. Teeth rugose, the hinder ones with a rounded tubercle on the inner side.

e. Skull with the maxillary bones bent up in front of the blowers, and forming a vault. The teeth compressed. The paddles fan-shaped, truncated at the end. Platanistina.

17. PLATANISTA.

My thanks are due to Dr. Richardson of Haslar, to Mr. Brightwell and the Committee of the Norwich Philosophical Society, and to Mr. Bell, for allowing me to have at the Museum for comparison the specimens of these animals in the collections under their care; and to Mr. Owen and the Council of the College of Surgeons, and the Council of the Zoological Society, for permission to examine the skulls of the different species of this family in their Museums.

A. *Jaws tapering, the symphysis of the lower jaw short, not half the length of the jaw. Dorsal fin generally distinct. Pectoral fin ovate acute.* Marine.

a. Upper jaw toothless; lower jaw with only one or two teeth on each side, often hidden in the gums. Beak of skull keeled on each side, the keel being sometimes large, and forming an elevated reflexed wing on each side. Hyperoodontina.

Hyperoodontina, *Gray, Zool. Ereb. & Terror*, 24, 25.
Diodonea, pars, *Rafin. Anal. Nat.* 60, 1815.

1. HYPEROODON.

Upper jaw toothless; lower jaw with a small, conical, acute, rudimentary, moveable tooth, in a cavity under the gums, on each side of the front part. Blowers linear, transverse, sublunate.

Hyperodon, *Rafin. Anal. Nat.* 60, 1815.

1. Uranodon, *Illiger, Prod.* 143, 1811.
Nodus (sp.) edentulus, *Wagler, N. S. Amph.* 34.
Orca, *Wagler, N. S. Amph.* 34.

2. Hypodon, *Haldeman.*
Chenocetus, *Eschricht, Danish Trans.*
Cetodiodon, *Jacob, Dublin Phil. Journ.*
Diodon, *Lesson, Ouvr. Buffon*, i. 124.
Anarnacus, *Lacep.*; *Dumeril, Z. A.*; *Rafin. Anal. Nat.* 61, 1815; *Gray, Zool. Ereb. & Terror.*
Ancylodon, *Illiger, Prod.* 142, 1811; *Oken, Lehrb. Naturg.* 673, 1815.

Monodon (spurius), sp. *O. Fab.*
Heterodon (sp.), *Desmarest, Mam.*
Delphinus (sp.), *Desmarest, Mam.*

3.? Diodypus, *Rafin. Anal. Nat.* 60, 1815; no type nor char.

Cervical vertebræ united, all anchylosed together. *Mus. Hull. Graves, Edin. Phil. Journ.* 1830, 59.

According to Voight and Wesmael, the ends of the blowers, as in other dolphins, point forward. Dale, Baussard and Doumet describe them as pointing backwards; Desmarest and others assumed the latter as a generic character.

This genus is at once known from *Delphinorhynchus*, without examining the skull, by the head being more convex and rounded in front, and the two teeth being situated in the front end of the lower jaw, while in that genus they are in the middle of each side.

Lacepède called the genus *Hyperoodon*, and Illiger *Uranodon*, because of the teeth on the palate described by Baussard. They have not been observed on other specimens; and Illiger, in his generic character, by mistake says the two teeth are in the upper jaw (*Gen.* 143); and Professor Eschricht, in his unpublished paper, has proposed the name of *Chenocetus*, instead of *Hyperoodon*, which is founded on an erroneous description, as the name *Goose-whale*, or its translation, is applied to this animal by the inhabitants of most part of the seas where it inhabits, and Dr. Jacob calls it *Cetodiodon*.

Professor Eschricht, in the *Danish Transactions*, has given an account of the history of the genus, and of its anatomy, including some admirable details of its brain. He also shows that there are numerous small teeth in the jaws (see fig. at pp. 331–335), besides the two large teeth in front.—*Danish Acad. Trans.* xi. 327, 331, 332, 334, 335.

O. Fabricius described a whale under the name of *Monodon spurius*, called by the Greenlanders *Anarnak*, as having two small, conical, slightly-curved, blunt teeth prominent in front of the *upper* jaw; the lower jaw toothless. M. Cuvier (*Oss. Foss.*) regards it as a *Hyperoodon*, and he only believed in the existence of one species of the genus. M. F. Cuvier, who misunderstood the description of Chemnitz with respect to the teeth of *Balæna rostrata*, is inclined to unite it to that species, with which it agrees in being all black, but observes they differ greatly in size.—*F. Cuv. Cetac.* 226. It cannot be the young Narwhal, for the back is finned.

Professor Eschricht regards the *Anarnac* or *Monodon spurius*, O. Fab., as the common *Hyperoodon*, in which Fabricius mistook the lower for the upper jaw. The fat of *Hyperoodon* is purgative, as Fabricius describes to be the peculiarity of the *Anarnac*.

Lacepède (*Cetacea*, 164) described it as a genus under the name of *Anarnacus*, and Illiger (*Prod.* 142) under that of *Ancylodon*; and in the *Zoology of the Erebus and Terror*, on the strength of Fabricius's usual accuracy, I adopted the views of this naturalist; but Prof. Eschricht's observations have induced me to believe that Cuvier and other naturalists have been right in considering it as a synonym of *Hyperoodon*.

The error of Fabricius is very pardonable, as Desmarest and Lesson have mistaken the upper for the lower jaw, in Chemnitz's description (*Desm. Mam.* 520; *Lesson, Mam.* 427; *Cetac.* 120); and M. F. Cuvier has not well understood it, as pointed out by M. Wesmael (*l. c.*), and Illiger makes the same mistake with regard to his species.

Physeter bidens (Sowerby) has been referred to this genus, but the form of the head and position of the fins, the teeth, and the form of the skull, show it to be a *Ziphius*.

The descriptions of the species of this genus are so different, that I am inclined to keep them distinct, for the purpose of calling attention to them. Cuvier regarded them all as one.

† *Crest of skull thin and far apart on the upper edge.*

* *Dorsal fin in the centre of the back.* Hyperoodon, *Lacep.* Uranodon, *Illiger.*

1. Hyperoodon Butzkopf. The Bottle-head.

Black, beneath lead-coloured; dorsal fin central; lower jaw with two pointed teeth in front, sunk in the gums; "palate with acute, hard points;" blowers transverse, lunate, with the convexity in front.

1. Hyperoodon Butzkopf, *Lacep. Cetac.* 319, from *Baussard, Journ. Phys.* xxxiv. 201. t. , copied *F. Cuv. Cetac.* 241. t. 17. f. 1. t. 11. f. 1, cop.; *Gray, Zool. Erebus & Terror*, 20. t. 3. f. 1, 2, *animal*, f. 4, 5, *skull.*
   Delphinus? edentulus, *Schreb. Saugth.* t. 347.
   Nodus (edentulus), *Wagler, N. S. Amph.* 34.
   D. Hyperoodon, *Desm. Mam.* 521; *Fischer, Syn.* 515.
   D. Honfloriensis, *Desm.*
   D. Butzkopf, *Bonnat.* 25; *Desm. N. Dict.* ix. 176.
   Heterodon Hyperoodon, *Lesson, Man.* 419.

2. Bottle-head, or Flounder's Head, *Dale, Hist. Harwich*, 411. t. 149, cop.
   Beaked Whale, *Penn. Brit. Zool.* t.

? 3. Monodon spurius (Anarnak), *O. Fab. Faun. Græn.* 31; *Bonnat. Cetol.* 11; hence

Delphinus anarnacus, *Desm. Mam.* 520.
D.? spurius, *Fischer, Syn.* 515.
Anarnakus Grœnlandicus, *Lacep. Cet.* 164.
Ancylodon (spurius), *Illiger, Prod.* 142.
Heterodon anarnacum, *Lesson, Man.* 418.

4. Hyperodoon, *Longchamps, Mém. Soc. Linn. Norm.* vii. 19. t. 1.
Inhab. North Sea. Harwich, *Dale.*

	Baussard.				Dale.	
	Adult.		Young.		Female.	Male.
	ft.	in.	ft.	in.	ft.	ft.
Length, entire	23	6	12	6	13	18
„ of beak.....			0	5		
„ to blower.....	4	4	1	11		
„ of head.....	1	4				
„ of pectoral	2	0	1	0		
„ to dorsal fin....	13	6	7	8		
„ of dorsal fin....	2	0	1	0		
„ to vent.....			7	10		
Width of pectoral	1	3	7	0		
„ of caudal	6	10	3	2		
Circumference	15	7	8	0		
„ of head..	8	7				
Height of dorsal	1	3	7	0		

Heterodon Dalei (Lesson) is not from Dale's description of this whale, but from Blainville's account of *Delphinorhynchus micropterus.*

Lacepède placed this species as the type of his *Hyperoodon*, and refers *Delphinus bidentatus* to *Delphinus*!

F. Cuvier considers Hunter's and Baussard's as incontestably the same species, taking no notice of the position of the dorsal (*Cetac.* 242). Dale does not mention the teeth, but they are only to be seen when the flesh is removed.

** *Dorsal fin behind the middle of the back, triangular.*

2. Hyperoodon rostratum. The Beaked Hyperoodon.

Blackish; pectoral nearly $\frac{1}{3}$, and dorsal $\frac{2}{3}$ the length from the tip of the beak; blowers lunate, concave in front.

Hyperoodon rostratum, *Gray, Zool. Erebus & Terror*, 20. t. 3.

Var. 1. Black above and below. Vertebræ 46; 11 lumbar and 19 caudal. "Blowers concave towards the head, rather in front of the eye; palate smooth."—*Wesmael.*

Hyperoodon rostratum, *Wesmael, Acad. Brux.* 1840, xiii. t. 1, 2.

Balæna rostrata, *Chemnitz, Berlin, Besch.* iv. 183; hence
Delphinus Chemnitzianus, *Blainv. in Desm. N. Dict.* ix. 175.
Heterodon Chemnitzianum, *Lesson, Man.* 418.
Inhab. North Sea.

Length, entire	6·70	metres.
„ to blowers	1·24	„
„ to eye	1·06	„
„ to point of dorsal	4·40	„
„ of pectoral	0·70	„
„ to vent	5·17	„
Breadth of pectoral	1·40	„
„ of face	0·86	„
Circumference	3·76	„

Var. 2.? Blackish brown, beneath brownish white. Vertebræ 45; 12 lumbar and 17 caudal.—*F. Cuv.*

Bottle-nose Whale of Dale, *Hunter, Phil. Trans.* lxxvii. t. 19, cop. *Bonnat. Cetac.* t. 11. f. 3, and *Bell, Brit. Quad.* 292. f.
Delphinus Hunteri, *Desm. Mam.* 520, from *Hunter.*
D. diodon, *Lacep. Cet.* 309. t. 13. f. 3; *Gerard, Dict. S. Nat.* vi. 78.
D. bidentatus, *Bonnat. Cet.* t. 11. f. 3; *Desm. N. Dict.* ix. 175, from *Hunter.*
Hyperoodon, *Cuv. Oss. Foss.* v. 321. t. 24. f. 19, 21, copied from *Camper*, t. 13.
B. à museau pointu, *Camper, Cetac.* 78. t. 13–16.
Cetodiodon Hunteri, *Jacob, Dublin Phil. Journ.* 1825, t.
Hyperoodon, *Thompson, Mag. N. Hist.* 1838, 221.
H. Butzkopf, *W. Thompson, Annals. & Mag. N. Hist.* 1846, 150. t. 4. iv. 375.
Inhab. North Sea. Thames, *Hunter.* Humber, *Thompson.*

Var. 3. Blackish grey, paler on the belly and round the eyes; upper part of lower jaw yellowish marbled. Teeth none; the edge of the lower jaw shuts into a corresponding groove in the upper jaw. Blowers lunate, with the concavity in front, exactly over the eye, 6 inches by 3.

Hyperoodon, "*Voight's Mem.* t. ;" *F. Cuv. Cetac.* 245.
Inhab. North Sea, *Kiel.* Skull, *Kiel. Bot. Gard.*

	ft.	in.
Length, entire	20	6
„ of beak	1	9
„ to eye	4	2
„ from blower to dorsal	12	0

	ft.	in.
Length of dorsal	1	8
„ of pectoral	2	10
„ from dorsal to caudal ..	6	2
Breadth of beak	1	0
„ of pectoral.....	0	8
„ of tail.....	6	2
Height of dorsal	1	4
Circumference	13	0

The dorsal fin is said to be 12 feet from the blower, but that makes the body too long for the measurement.

a. Teeth. Liverpool.

The *skeleton* in the Museum of the College of Surgeons (probably Hunter's) has the skull about 45 inches long, and the elevated plates of the maxillary bone are thin, leaving a broad space between them, in front of the blowers, and they are as high as the frontal crest.

Mr. Pearson of the Hull Philosophical Society, Mr. Ball of Dublin, and Mr. W. Thompson of Belfast, have sent me various detailed drawings of the head of the *Hyperoodons* taken off the British and Irish coasts, in their possession; they (the skeleton at Liverpool, and the French skeleton which has lately been added to the Anatomical Museum of Paris) appear all to belong to one species, and to be the same as Hunter's specimens in the College of Surgeons, and the skull figured by Camper and Cuvier.

Mr. Thompson (*Mag. Nat. Hist.* 1838, 221) describes a specimen stranded near Hull in 1837; it has two strong, robust teeth at the extremity of the lower jaw, covered and entirely concealed by the gums. The skull corresponded in its general form with the figures in Cuvier; but the rise of the back part of the head is larger in proportion to the anterior rise than in that figure. The skull measures from the snout to the base of the front rise 9 inches; from thence across the rise to the base of the second rise 1 foot; from thence across the hinder rise to the neck 1 foot 11 inches. The length of the skeleton is 17 feet 6 inches; vertebræ 39; viz. 7 cervical, 9 dorsal, with ribs; 20 lumbar and 8 caudal. It is in the Museum of the Hull Philosophical Society. It agrees in all particulars with Hunter's specimen in the College of Surgeons. Mr. Thompson considers Hunter's and Baussard's cetacean as identical, and Dale's the male of the same species.

Mr. W. Thompson has given in the *Ann. & Mag. Nat. Hist.* 1846, 150. t. 4. iv. 375, the following description and measurement of a recently caught specimen; he calls it *H. Butzkopf*.

"Blackish lead hue, merely a lighter shade beneath, and not white. Teeth, two on each side, in front loosely covered by the gums; the front pair smaller; blower slightly crescentic, pointed

directly towards the head, and the eyes on the same vertical plane; eyes round; 'a male;' and the following measurements:—

	ft.	in.
"Length, entire, straight	20	4
„ over curve	23	4
„ of nose	0	11
„ of gape	1	7
„ to eye	3	1
„ to pectoral fin	5	11
„ of pectoral fin	2	2
„ to dorsal fin	10	9
„ of dorsal at base	1	7
Girth, greatest	11	6
Width of pectoral	0	7
„ of caudal	5	6
Length of dorsal	1	0."

Dr. Jacob, in his description of *Cetodiodon Hunteri* (*Dublin Phil. Journ.* 1825), observes, that there are no teeth in the palate. He believes that the three skulls in Dublin, viz. of the skeleton in Mus. Coll. Surg. Dublin; a skull, Royal Dublin Society; and a skull in the Museum of the School of Anatomy, Peter's Street, Dublin,—belong to one species; they all have two teeth in the lower jaw, hid in the gums. In the *Zoology of the Erebus & Terror*, t. 3. fig. 4 & 5, is a representation of one of the skulls of this species in the Dublin Museum, from a drawing kindly communicated by R. Ball, Esq.

There is a skeleton of this species in the Museum of the Edinburgh University.

By the kindness of Mr. S. Stutchbury I have been enabled (in the *Zoology of the Erebus and Terror*, t. 3. f. 1, *animal*, f. 2, *tail*, f. 3, *blowers*) to give a new figure of this species, from a drawing made by Mr. W. H. Baily, of a specimen taken at Aust Passage, Oct. 1840. The measurements, on the drawing taken at the time, are as follows:—

	ft.	in.
Length, entire, along the back	22	2
„ straight line	21	0
Girth on widest part	12	6
„ of posterior part of fins	11	2
„ over the eyes to centre of blow-hole	8	9
„ at highest part of head	6	6
„ at close of tail	2	11
Length of upper part of upper jaw	1	1
„ of lower jaw	1	8
„ of upper part of lower jaw	1	9

	ft.	in.
Length of lower jaw to eye	3	3
„ from tip of lower jaw to anterior part of flipper	5	3
„ of flipper	2	3
Width of flipper	0	8
Length from anterior part of flipper to vent	8	0
„ from end of tail to anterior part of dorsal fin	9	8
„ from end of tail to posterior part of dorsal fin	7	0
Breadth of dorsal fin	1	6
Length of dorsal fin	1	2
Breadth of tail	6	4
Depth of tail	1	8
Length of orifice of vent	1	8

The skeleton of this specimen is preserved in the Bristol Institution.

The skeleton in Mus. Roy. Institution, Liverpool, has the skull 60 inches long, 18 inches from top of crest to palate; the intermaxillaries are convex, and distinctly to be seen to the front of the blowers; orbital crest erect, scarcely as high as the process at the back of the blower; the nuchal vertebræ anchylosed, the three first into one mass, with a long conical lateral process; the dorsal process of the two hinder separate.

3. Hyperoodon Doumetii. The Corsican Hyperoodon.

Jaws paved with acute tubercles; dorsal $\frac{3}{4}$ the length from the tip of the jaws: blowers lunate, with the convexity in front.

Hyperoodon, *Doumet, Bul. Soc. Cuvier.* 1842, 207. t. 1. f. 2.
Inhab. Corsica.

"Jaws toothless, but paved with small, long and acute tubercular granulations; lower jaw with two rather longish, acute, slightly arched and longitudinally grooved teeth in front; larynx with a kind of funnel at the base of the tongue, like the beak of a duck, or rather of a spoonbill, $5\frac{3}{4}$ inches long; gape small; beak conical; eyes small, near middle of head; blowers lunate, with the points directed backwards; pectoral fin 19 inches long, $6\frac{3}{4}$ wide; dorsal nearly 8 inches high, $49\frac{1}{2}$ inches from the tail; the tail is broad, lobes equal."—*Doumet.*

According to this description the dorsal fin of this species must be further back than in any other of the genus, and the pavement of the jaws is quite peculiar. It agrees with Dale and Baussard's descriptions in the form of the blower, but differs from them in the position of the dorsal.

**** Dorsal fin posterior, oblong, truncated at the end? Jaws curved up.* Diodon, *Lesson.*

4. HYPEROODON DESMARESTII. DESMAREST'S HYPEROODON.

Delphinus Desmarestii, *Risso, Europ. Merid.* iii. 24. t. 2. f. 3; *F. Cuv. Cetac.* 159.
Le Diodon de Desmarest, *Lesson, Œuv. Buff.* i. 124. t. 2. f. 2.
Orca (Desmarestii), *Wagler, N. S. Amph.* 34.
Inhab. Nice: common, March and September.

"Steel-grey, with numerous, irregular, white streaks, beneath white; body thicker in the middle; tail slender, long, keeled, rounded on the belly; head not swollen, ending in a long nose; upper jaw shorter, toothless, lower much longer, bent up, and with two large conical teeth at the end; teeth nicked near the tip; the eyes small, oval; blowers large, semilunar; pectoral fins short, dorsal rather beyond the middle of the back, nearly above the vent; the caudal fin broad, festooned. Length nearly 16 feet. It differs from *D. Diodon* of Hunter in the forehead not being swollen, and in the lower jaw being produced and bent up, the pectoral being pointed, the dorsal more obtuse, and the body being white-streaked."

This species is only known by the above account extracted from Risso. F. Cuvier placed it in the restricted genus *Delphinus*. Risso appears more correctly to have compared it with *Hyperoodon*, but it differs from that genus in several particulars, especially in the form of the forehead and of the dorsal fin.

Lesson (*Tab. R. A.* 200) forms of this species, and the *Physeter bidens*, Sowerby, the subgenus *Diodon*!

†† Crest of skull thick and close together on the upper edge.

5. HYPEROODON LATIFRONS.

Skull large, heavy, solid, the reflexed part of the maxillary bones very thick and thickened internally, so as nearly to touch each other in front of the blower, much higher than the hinder part of the skull; lower jaw rather curved up at the top; teeth 2, solid, conical, acute, rather compressed.

Hyperoodon latifrons, *Gray, Zool. E. & T.* 27. t. 4, *skull.*
Inhab. North Sea. Coast of Lancashire; Orkneys; Greenland.

a. Skull imperfect. Orkneys. From Mr. Warwick's collection.

Length of skull (wanting the end) .. 62 inches.
Height of skull behind ..... 42 „

The skull figured in *Voyage of the Erebus & Terror*, tab. 4.

There is a skull from Greenland, presented by Capt. Wareham, in the Newcastle Museum. Height of occiput, 25; of ridge, 32. Length of skull, 92; to front of ridge, 54; of beak, 26 inches.

There is also a skeleton with the skull from the Firth of Forth, in the College Museum, Edinburgh; the skull of which is 68 inches long; the crest very thick, far apart, and erect internally and rounded externally.

There is a very perfect skull of this species in a garden on the borders of Lancaster Bay, taken in that bay.

The examination of four skeletons and six or eight skulls of *H. rostratum*, and of three skulls of this species, have satisfied me that it must be the remains of a perfectly distinct species: it not only differs from *H. rostratum* in the thickness and solidity of the crest, but in the crest being much higher than the hinder part of the skull, while in all the skulls of *H. Butzkopf* the crest is of the same height with the frontal ridge.

Doubtful species.

1. Delphinus densirostris, *Desm. Nouv. Dict. N.* ix. 178; *Mam.* 522, note.

Only described from a fragment of a jaw, 9 inches long, $2\frac{1}{2}$ inches high, and 2 inches broad at the widest part, straight, pyramidical, triangular at the end, and without any teeth or cavity for any tooth in the lower jaw. It is very heavy and dense. Probably the end of a *Hyperoodon*.

2. Alugninich, Tschieduk, *Chamisso, Nov. Act. Nat. Cur.* xii. 261. t. 20. f. 8, which Fischer (*Syn. Mam.* 515) refers with doubt to *D. spurius*, is perhaps a species of this genus.

One of the species of this genus may probably be the Goose-beaked Whale of Pontoppidan, *Hist. Nat. Norway*, ch. v. 123, 124. f.

2. Ziphius.

Head contracted behind; nose produced, not separated from the forehead; eyes moderate; blowers on crown, lunate; teeth two, large, compressed, in the middle of the lower jaw; throat with two diverging furrows; body elongate; pectoral fins small, low down, oval, tapering; dorsal falcate, behind the middle of the body.

Skull with nose elongated, produced, keeled on each side; skull-cavity small; forehead high; hinder wing of the maxilla expanded, horizontal; palate smooth; lower jaw broad behind, narrowed and bent down in front of the large lateral teeth.

Ziphius, *Cuvier, Oss. Foss.* v. 350; *Gray, Zool. Erebus & Terror*, 27.
Diodon, pars, *Lesson, Tab. R. A.*; *Bell, Brit. Quad.* 499.
Anodon, pars, *Lesson, Tab. R. A.*
Heterodon, sp., *Lesson, Man. Mam.*
Delphinorhynchus, sp., *Gray, Ann. & Mag. N. H.* 1846.
Physeter, sp., *Sow. Brit. Misc.* 1.

This genus is very like *Delphinorhynchus*, but is easily known by the large size of the teeth in the middle of each side, and the peculiar form of the lower jaw. Cuvier established the genus on fragments of three fossil heads:

1. Z. curvirostris, *Cuv. Oss. Foss.* v. 350. t. 27. f. 3.
2. Z. latirostris, *Cuv. Oss. Foss.* v. 352. t. 27. f. 4–8.
3. Z. longirostris, *Cuv. Oss. Foss.* v. 356. t. 27. f. 9, 10.

Cuvier remarks, describing the first head, that "cette tête a, comme on voit, de grands rapports avec le Cachalot, et encore de plus grands avec l'Hyperoodon. Elle ne diffère de ce dernier que parce que les maxillaires ne redressent point sur les côtés du museau en cloisons verticales, et que l'espèce de mur de derrière les narines ne se borne pas à s'élever verticalement, mais qu'il se recourbe pour former un demi-dôme au dessus de les cavités."—*Oss. Foss.* v. 352.

Mr. Bell, following Lesson in adopting his heterogeneous genus *Diodon*, has considered Sowerby's whale as a distinct genus from *Hyperoodon*, but he observes, "whether the generic distinction of the two be correct, appears very doubtful."—*Brit. Mam.* 499.

* *Jaws elongate.*

1. Ziphius Sowerbiensis.

Black, grey beneath; lower jaw moderately broad behind, and gradually narrower and slightly bent down in front of the teeth.

Physeter bidens, *Sowerby, Brit. Misc.* t. 1, *and Icon. ined. in Mus. Brit.* t.
Diodon bidens, *Bell, Brit. Quad.* 497, fig. cop. *Sowerby.*
Delphinus Sowerbii, *Jardine, Nat. Lib.* t. 12, cop. *Sowerby.*
D. Sowerbiensis, *Blainv. in Desm. Nouv. Dict. H. N.* ix. 177.
D. Sowerbyi, *Desm. Mam.* 521.
Delphinorhynchus bidens, *Gray, Ann. & Mag. N. H.* 1846.
Heterodon Sowerbyi, *Lesson, Man. Mam.* 419.
Ziphius Sowerbiensis, *Gray, Zool. Erebus & Terror*, t. 572. f. 3, 4, from *Blainv. drawing*, p. 53. t. , from skull.
Inhab. North Sea. Elginshire, *Brodie*, 1800.

The specimen yet observed was 16 feet long and 11 feet in circumference.

Besides the beautiful figure engraved in *Sowerby's British Miscellany*, there is a drawing of the head as sent by Mr. Brodie, made by Mr. Sowerby, and exhibited by him at one of Sir Joseph Banks's Sunday-evening parties, now preserved in the Banksian collection in the British Museum. The skull was preserved in Mr. Sowerby's museum, in Mead's Place, and when distributed at his death it was purchased by the Rev. Dr. Buckland, the Dean of Westminster, and sent to the anatomical museum in Oxford, from whence Dr. Acland kindly sent it to me for examination.

While in Mr. Sowerby's possession, M. De Blainville, when on a visit to England, made a slight sketch of the skull (engraved in *Zool. Erebus and Terror*, t. 5), and, under the name of *D. Sowerbiensis*, gives the following description of it: "Tête osseusse, la machoire supérieure est plus courte et infiniment plus étroite que l'inférieure qui la reçoit; en outre cette machoire inférieure est armée de chaque côté et au milieu de son bord d'un seul dent très fort comprimée et dirigée obliquement en arrière. L'orifice de le vent est en croissant dont les cornes sont tournées en avant."—*Blainv. Desm. Dict. H. N.* ix. 177.

The above description and Blainville's sketch show that it belongs to the genus *Ziphius* of Cuvier, before only known in the fossil state; and the examination of the skull has proved the accuracy of these determinations.

Before discovering the drawing of the skull, I was induced to regard this species, from the lateral position of the teeth and small size of the fins, as the same as the *Delphinorhynchus micropterus* of the coast of France and Belgium (*see Ann. & Mag. N. H.* 1846), believing the difference in the size of the teeth (which Mr. James Sowerby's description appears to indicate) to be only a peculiarity produced probably by the age of the specimen, instead of being, as it has proved to be, a distinctive character of the genus.

** *Jaws short.*

2. Ziphius Sechellensis. The Sechelle Ziphius.

Ziphius de Sechelles (*M. le Duc*, 1839), *Mus. Paris.*
Ziphius Sechellensis, *Gray, Zool. E. & T.* 28. t. 6. f. 1, 2, lower jaw.
Inhab. Sechelles. *a.* Skull in Mus. Paris.

The skull is very like that of *Delphinus micropterus*, but the nose-bones are thicker, heavier and higher. The teeth in the middle of the lower jaw, as in *Z. Sowerbiensis*, but larger and compressed. The hinder part of the lower jaw is very broad, the front half much narrower and bent down in an arched manner.

Very like the fossil from D'Anvers.

3. Delphinorhynchus.

Head attenuated, contracted behind. Nose produced, bald, not separated from the forehead. Eyes moderate. Lower jaw fitting into a groove in the edge of the upper. Teeth few, small or rudimentary, in middle of lower jaw, not developed till late. Throat with four parallel slits beneath. Body elongate, rather swollen behind. Pectoral fin low down the side, oval, narrow, small. Dorsal falcate, behind the middle of the body, about $\frac{2}{3}$ from the nose. Blowers on the crown, in a curved line, with the concavity in front. Tail with two falcate lobes, flat, without any central prominence. Sexual organs under middle of dorsal.

Skull triangular. Forehead very high in front and swollen behind. Intermaxillaries curved in front. Nose very long, compressed at the hinder end, very narrow, slightly keeled on each side. Hinder wing of the maxilla expanded horizontally over the orbits. Nasal bones encased in the frontal and intermaxillaries. Temporal pit very small. Palate smooth. Lower jaw-bones elongate, tapering, slender, nearly straight. The ear-bone is attached by an apophysis to the base of the skull. "Vertebræ 38; viz. 6 cervical separate, 10 costal, 11 lumbar, 11 true caudal. Metacarpal bones cartilaginous."—*Dumortier, Mém. Brux.* xiii. t. 10.

Nodus, sp. *Wagler, N. S. Amph.* 34, 1830.
Delphinorhynchus, *Blainv. Rapp, Cetac.; Gray, Zool. Ereb. & Terror.*
Delphinorhynchus, sp. *F. Cuvier. Cetac.* 114.
Aodon, *Lesson, Œuv. Buffon.*
Heterodon, sp. *Blainville; Lesson, Man.*
Delphinus, sp. *Blainville; Desm. Mam.*

The skull (as remarked by M. Cuvier) much more resembles that of *Delphinus* than *Hyperoodon*. The animal is at once known from the latter genus by the head not being convex and rounded in front, and by the teeth being in the middle and not at the end of the jaws, and from *Ziphius* by the small size of the teeth.

Blainville, when he first saw the animal on the coast of France, considered it the same as Dale's *Hyperoodon*, and F. Cuvier follows him; but M. Cuvier pointed out, in the *Règne Animal*, the difference in the form of the skull of the French animal.

Delphinorhynchus micropterus. Blainville's Whale.

Body deep ash, beneath white (when alive brownish ash-colour, belly whitish ash); forehead tapering; dorsal fin $\frac{2}{3}$, pectoral fin $\frac{2}{3}$, from end of nose; blowers before the eyes.

Dauphin de Dale, *Blainv. N. Bull. Soc. Phil.* 1815, 329; *F. Cuv. Mam. Lith.* t. bad.

Nodus Dalei, *Wagler, N. S. Amph.* 34, 1830.
Delphinorhynchus micropterus, *Dumortier, Mém. Acad. Brux.* xii. t. 1–3, good; *F. Cuv. Cetac.* 114. t. 9. f. 1, not good; t. 7, skull.
Delphinus micropterus, *Cuv. Reg. An.* i. 288.
Heterodon Dalei, *Lesson, Man. Mam.* 419, *from Blainv.*
Aodon Dalei, *Lesson, Ouvr. Buffon*, i. 155. t. 3. f. 1.
Inhab. Coasts of Europe. Havre, 1825, *Blainv.* Ostend, 1835, *Dumortier.*

M. Dumortier found, near the middle of each side of the lower jaw, an alveolus, as if for a tooth. His figure represents the pectoral as $\frac{2}{9}$, and the dorsal as $\frac{1}{9}$, from the end of the nose. The following are the measurements of the two described specimens :—

	Blainv. ♀ ft.	Dum. ♀ metres.
Length, entire	15·0	3·45
„ of head	2·7	(nose) 0·33
„ to blowers	2·3	0·44
„ to pectoral	3·4	0·91
„ of pectoral	1·6	0·30
„ to dorsal.....	9·1	2·04
„ of dorsal.....	0·10	0·27
„ to eye.....	...	0·49
„ to the vulva...	...	2·21
Circumference	7·6	2·0
Width of pectoral	0·6	0·12
„ of caudal	3·0	0·68
Height of dorsal	0·11	0·27
Breadth of blower	...	0·10

b. Upper and lower jaw with few or deciduous teeth. Wings of the maxillary bones expanded and shelving downwards. The beak short, deflexed. Forehead convex. Head rounded, without any beak. Monoceratina.

Diodonea, pars, *Rafin. Anal. Nat.* 60, 1815.
Monoceratina, *Gray, Zool. E. & T.*

* *Lower jaw toothless. Upper jaw with tusk.*

4. Monodon.

Head round and convex in front; dorsal fin none; lower jaw not so wide as the upper, toothless. Upper jaw in the male (and rarely in the female) with a produced spiral tusk.

Cervical vertebræ: first free, second and third united by spinous process, not by the body, thin; rest free, thin.

Monodon, *Artedi, Gen.* 78; *Synon.* 108; *Hill. Anim.* 313. t. ; *Linn. S. N.* ed. 6, 17; *Schreb.*; *Gray, Zool. E. & T.* 29, not *Swainson.*
Narwal, *Schonev. Ichth.* 28.
Narvalus, *Lacep. Cet.* 163; *Dumeril.*; *Rafin. Anal. Nat.* 61, 1815.
Ceratodon, *Brisson, R. A.* i. 231, 1762; *Illiger, Prod.* 142, 1811; *Wagler, N. S. Amph.* 34, 1830.
Diodon (or Diodonta), *Storr. Prod. Mam.* 42, 1780.
Monoceros, *Charlet. Exerc. Pisc.* 47.
Monoceros piscis, *Willoughb. Pisc.* 42. t. A. f. 2, *App.* p. 12.
Oryx, *Oken, Lehrb. Naturg.* 672, 1815.

Right tusk generally not developed. Female generally without tusk, but sometimes has one: see *Linn. Trans.* xiii. 620.

In the Museum of the College of Surgeons there are several Hunterian preparations of the skull of this animal, Nos. 1147, 1148, 1149, 1150, 1151, showing the two rudimentary teeth inclosed in the cavity, in the female, and the single exserted one in the male skulls.

Mr. Knox observes, the female Narwal skulls have two rudimentary teeth in the upper jaw, which are rarely protruded. In the fœtus, on each side the upper jaw, in the usual place, are two hollow teeth, obviously the extremities of the spiral permanent teeth of the male; they are completely imbedded in the jaw; and if the animal is a male the left tooth continues to grow, the right after a time fills up, its central cavity containing the pulp disappears, and after attaining a growth of five or six inches, the jaw elongates to correspond with the growth of the animal and the other tooth, and the abortive tooth remains imbedded in the jaw for life.—*Trans. R. Soc. Edin.* ii. 413.

The *Monodon spurius*, O. Fab., the type of the genus *Anarnacus* of Lacepède (*Cetac.* 164), appears by later research to have been founded on an inaccurate description of an *Hyperoodon*, the lower jaw having been mistaken for the upper, and the converse.

1. Monodon monoceros. The Narwhal.

Black; when old, whitish-marbled.

Monodon monoceros, *Linn. Faun. Suec.* 2. 16; *Syst. Nat.* i. 105; *Schreb. Saugth.* t. 330; *Desm. Mam.* 523; *Fischer, Syn.* 516; *Scoresby, Arct. Reg.* i. 486, iii. t. 12. f. 1, 2; *Fleming, Mem. Wern. Soc.* i. 146, fig.; *Gray, Zool. E. & T.* 29; *Sow. Brit. Misc.* t.
M. unicornu, *Linn. Mus. Adolph.* i. 52.

M. Narwhal, *Blumenb. Handb.* 137; *Abbild.* t. 44.
M. microcephalus, *Desm. Mam.* 789; *Fleming, Wern. Mem.* i. t.
M. Andersonianus, *Desm. Mam.* 789.
Narwhalus Andersonianus, *Lacep. Cet.* 163; *Desm. N. D. H. N.* 217.
N. microcephalus, *Lacep. Cet.* 163. t. 5. f. 2.
N. vulgaris, *Lacep. Cet.* 142. t. 4. f. 3, *from Klein.*
Narwhal, *Klein, Miss. Pisc.* ii. 18. t. 2. f. c, cop. *Lacep.* t. 4. f. 3; *Anderson, Iceland*, 225, fig.
Unicorn Narwhal, *Shaw, Zool.* ii. 473. t. 225.
Unicornu Marmum, *Wern. Mus.* 282. t. 283 t.
Einhorn, *Martin, Spitzb.* 94.
Osteol. *Camper, Cet.* t. 29, 31, skull; *Albers, Icon.* t. 2, 3; *Home, Lectures Comp. Anat.* t. 42. f. 1; *Cuv. Oss. Foss.* v. t. 22. f. 7; *Anton, Osteol.* ix. t. 6.
Inhab. North Ocean, Scotland.

a. The tooth.
b. Skeleton. Greenland.
c. Skull, female, not in a good state.

The following is the measurement, 1st, of a skull in the College of Surgeons, and 2nd, the female skull *c.* in the British Museum, in inches and lines.

Skull:	length, entire.....	21·6	20·6
„	length of nose	9·9	9·3
„	width of orbit	14·6	14·0
„	width of notch	8·0	7·9
„	width of intermaxillaries.	3·0	3·6

The skeleton in Mus. Hull. Cervical vertebræ: first and second separate, large; rest very thin, separate, rudimentary. Skull: length, entire, 19 inches, of beak, $8\frac{1}{2}$; breadth at notch, 7 inches.

Scoresby gives a very good account of this animal (*Arct. Reg.* i. 131). The best figures are those of *Scoresby*, t. 15, then *Sowerby, Brit. Misc.* t. ; but this has a second horn erroneously added, which was not in the original drawing. Bonnaterre's figure is far too ventricose; it has been copied by *Lacep.* t. 4. f. 3, *Blumenbach*, t. 44, and others. *Duhamel's Pech.* iii. t. 26. f. 1, is, on the other hand, too slender, and with too small a head.

1. Narwalus microcephalus, *Lacep.* t. 5. f. 2, from a drawing of Mr. W. Brand, appears to be only a bad representation of this species.

2. Narwalus Andersonianus, *Lacep. Cetac.* 163, *from Anderson, Iceland*, 225, described from the same specimen as Mr. Brand drew, is figured by *Lacep.* t. 4. f. 2.

** *Teeth of upper and lower jaw conical, deciduous.*

5. Beluga.

Head rounded; forehead convex; teeth conical only on the front half of the jaws, oblique, often truncated, and the upper often deciduous; dorsal fin none; pectoral suboval; tongue oblong, with a simple, slightly raised edge; skull with the nose and the hinder wing of the maxilla bent down on the orbits, making the forehead very convex; lower jaw not so wide as the upper, with the condyle low down below the middle of the hinder edge. —*Zool. Ereb. & Terror*, t. 29. fig. 3.

Delphinopterus, *Lacep. Cet.* 243.
Delphinapterus *F. Cuv. D. S. N.* lix. 517, 1829.
Beluga, *Rafin. Anal. Nat.* 60, 1815; *Gray, Spic. Zool.* 2, 1828; *Lesson, Man.*; *Bell, Brit. Quad.* 1837.
Delphis, *Wagler, N. S. Amph.* 34, 1830.
Delphinus, pars, *Linn.*; *Illiger, Prod.* 143, 1811.
Catodon, pars, *Artedi, Gen.* 78; *Fleming, B. A.* 29.
Cetus, pars, *Brisson, R. A.* i. 227, 1762.
Physeter, pars, *Linn. S. N.*
Cachalot, pars, *Lacep. Cet.*
Phocæna, pars, *F. Cuv. Cetac.*

There is a great similarity in the general form of the skulls of *Phocæna*, *Beluga* and *Monoceros*, but independent of the size and teeth, they differ in the form of the convexity in front of the blower; in *Beluga* the front of the blower is flattish, in *Monoceros* there is a broad, half-oblong convexity, and in *Phocæna* a squarish tuberosity.

The genus *Delphinopterus* was formed by Lacepède to contain this animal, which he before described as a *Catodon*, and the *D. Senedette*, which is probably a *Catodon*. It has been applied by Peron, Cuvier and others to a very different animal.

1. Beluga Catodon. The Northern Beluga.

White; young black; the nose of the skull nearly $\frac{1}{2}$ the entire length, $1\frac{1}{2}$ the length of its width at the anterior notch; teeth $\frac{2}{8}-\frac{2}{9}$.

Balæna minor in inferiore maxilla tantum dentata, sine pinna aut spina in dorso.—*Sibbald, Phal.* 9; *Raii Syn. Pisc.* 15.
Cetus bipinnis, *Brisson, R. A.* 361.
Catodon fistula in rostro, *Artedi, Gen.* 78; *Syn.* 108.
Physeter Catodon, *Linn. S. N.* 107; *Gmelin, S. N.* i. 226; *Desm. Mam.* 525, from Balæna minor, *Sibbald, Phal.* 9.
? Cetus minor, *Brisson, Reg. Anim.* 361.

Beluga leucas, *Gray, Spic. Zool.* 2, 1828.
Physeter macrocephalus, var.? Catodon, *Fischer, Syn.* 518.
Balæna albicans, *Klein, Miss. Pisc.* ii. 12.
Delph. leucas, *Pallas, Reise*, iii. 92. t. 79; *Gmelin, S. N.* 1232; *Desm. Mam.* 519; *Zool. Ross. Asiat.* t. 32, ♀; *Mem. Wern. Soc.* iii. 17, ♂; *Cuv. Oss. Foss.* v. t. 22. f. 5, 6; *Bell, Brit. Quad.* 491, fig.
Beluga Catodon, *Gray, Zool. Ereb. & Terror*, 29. t. . f.
Catodon Sibbaldii, *Fleming, B. A.* 29, from *Sibbald.*
Small Catodon, *Shaw, Zool.* ii. 501.
Round-headed Cachalot, *Penn.*
Beluga borealis, *Lesson.*
Physeter macrocephalus β, *Gmelin, S. N.*
Delphinapterus Beluga, *Lacep. Cetac.* 243; *Scoresby, Arct. Reg.* i. 500, ii. t. 14.
Catodon albicans, *Lacep. Cetac.* 218.
Cetus albicans, *Brisson, Reg. Anim.* 359.
Albus Piscis Cetaceus, *Raii Syn. Pisc.* 11.
Beluga, *Shaw, Zool.* ii. 515. t. 223.
Delphinus albicans, *O. Fab. Faun. Græn.* 50; *Bonnat. Cet.* 24.
Delphinapterus leucas, *Gerard, Dict. Sci. Nat.* vi. 65.
? Dauphin blanc du Canada, *Duham. Pesch.* ii. x. t. 10.
Delphinus Canadensis, *Desm. Mam.* 516, from *Duham.*
Inia? Canadensis, *Gray, Zool. Erebus & Terror*, t. 5. f. 1, from *Duham. Drawing.*
Osteol. *Cuv. Oss. Foss.* v. 287. t. 22. f. 5, 6, *head.*
Inhab. North Sea. Greenland. Scotland, *Sibbald.*

a. Skeleton. Length, 15 feet. Greenland.

b. Skull. Greenland. Length, entire, 20 inches; of beak, $9\frac{1}{2}$; width at notch, 6, at orbit, $1\frac{1}{4}$ inch.

c. Stuffed specimen. Greenland.

d. A male specimen, $12\frac{1}{2}$ feet long, 6 feet 8 inches in circumference at the thickest part, called *Keela luak* by the Esquimaux.

e. Skull. Eschscholtz Bay, Behring's Straits. Presented by Captain Kellat, R.N. and Lieut. Wood, R.N.

Length of skull *b*, entire, 21 inches; of nose, 10; of tooth-line, $6\frac{1}{4}$; width at orbit, $11\frac{1}{2}$; at notch, $6\frac{3}{4}$ inches.

Duhamel (tab. 10. f. 4) figured the front half of a Dolphin under the name of *Dauphin blanc du Canada*, which Desmarest has named *Delphinus Canadensis*. M. Blainville gave me a tracing of the original drawing from which Duhamel engraved his figure (which is engraved in the *Zoology of the Erebus and Terror*, t. 5. f. 1). The form of the beak and the absence of a distinct dorsal fin induced me to believe that it might be a species of *Inia*; but from inquiries recently made in Canada, I have very little

doubt that Duhamel's animal was the *Beluga* which is common in that country. In the St. Lawrence they rarely exceed 15 feet long.

2. Beluga Kingii. The Australian Beluga.

Nose of the skull short, not half the entire length, scarcely longer than its width at the notch; teeth $\frac{10}{9}$, small, hooked.

Delphinus (Delphinapterus) Kingii, *Gray, Ann. Phil.* 1827, 375; *Fischer, Syn.* 514.
Beluga Kingii, *Gray, List Mamm. B. M.* 104; *Zool. Erebus & Terror*, 30. t. 7, *skull.*
Inhab. Coast of New Holland, *Capt. P. P. King.*

a. Skull: length, entire, $13\frac{1}{2}$, of beak $5\frac{1}{2}$; width at notch $4\frac{1}{2}$, at orbits 8 inches. New Holland. Presented by Capt. P. P. King, R.N.

Specimen described, *Gray, Ann. Phil.* 1827, and *Zool. Erebus and Terror*, t. 7.

This may be the *Jacobite*, or Tursio corpore argenteo extremitatibus nigricantibus, *Commerson MSS. Delphinus Commersonii*, Lacep. 317, from Cape Horn, cited by *Cuv. R. A.* i. 291, and *Oss. Foss.* v. 289.

Doubtful Genera.

? 1. Epiodon.

Dorsal fin none. Teeth of lower jaw rounded; upper jaw toothless.

Epiodon, *Rafinesque, Précis Someol.* 13 (1814); *Anal. Nat.*...no character.
Hyperodon, sp. (pars), *Lesson, Man.* 420.
Delphinus, pars, *Desm. Mam.* 521; *Fischer, Syn.* 516.

1. Epiodon Urganantus.

Epiodon Urganantus, *Rafinesque, Précis Someol.* 13, 1814.
Delphinus Epiodon, *Desm. Mamm.* 521; *Fischer, Syn.* 516.
Heterodon Epiodon, *Lesson, Man.* 420.
Inhab. Sicily.

2. Oxypterus.

"Dorsal fins two."

Oxypterus, *Rafinesque, Précis Someol.* 13, 1814.
Delphinus Oxypteri, *Desm. Mam.* 516; *Fischer, Syn.* 509.
Oxypterus Mongitori, *Rafinesque, Précis Someol.* 13.
Delphinus Mongitori, *Desm. Mam.* 516; *Fischer, Syn.* 509.
Inhab. Sicily.

1. Oxypterus Rhinoceros.

Black; white-eared.

Delphinus Rhinoceros, *Quoy & Gaim. Zool. Uranie*, 86. t. 11. f. 1; *Desm. Dict. Class. H. N.* v. 359; *Fischer, Syn.* 509.
Oxypterus Rhinoceros, *Lesson, Man.* 411.
Inhab. Equinoctial Ocean, lat. 5° 28′.

**** Teeth in both jaws permanent, compressed.*

6. Neomeris.

Dorsal fin none; nose of skull short, rounded at the end, flat, shelving above; teeth numerous, compressed, nicked, acute, extending nearly the whole length of the jaw.

Neomeris, *Gray, Zool. Erebus & Terror*, 30, 1846.
Delphinus, sp. *Cuvier, R. A.* i. 291.
Delphinapterus, sp. *Temm. Faun. Jap.* 7.

1. Neomeris Phocænoides. The Neomeris.

Black; teeth $\frac{1}{1}\frac{6}{6}$ or $\frac{2}{1}\frac{0}{9}$. Length 4 feet.

D. Phocænoides, *Dussumier, MSS.*; *Cuv. Reg. Anim.* i. 291.
Delphinus melas, *Temm. Faun. Japon.* t. 25, t. 26.
Delphinapterus melas, *Temm. Faun. Jap.* 7.
Anat. *Fauna Japon.* t. 25, *teeth*, t. 26, *bones*.
Inhab. Indian Ocean, Japan. "Cape of Good Hope," or "Malabar," *Dussumier*.

The figure in the *Fauna Japonica* is from a drawing made by a Japanese artist under Burger's inspection.

The skull of *Delphinus melas* in the Leyden museum is more swollen and broader than that of *Phocæna communis*; the nose is shorter, broader, more rounded at the end and nearly flat, not shelving above; teeth $\frac{1}{1}\frac{6}{6}$, larger and stronger; skull $\frac{1}{6}$ the entire length (in *Phocæna* $\frac{1}{5}$). *Nameno-juo*, Japan.

The short description of the *D. Phocænoides* of Cuvier, which Dussumier is said to have discovered at the "Cape of Good Hope," agrees with the figure in the *Fauna Japonica*. A skull in Mus. Paris, marked "*D. Phocænoides*, brought from Malabar by Dussumier in 1837." It is broader and shorter than that of *Phocæna communis*; teeth spathulate, rounded, oblique, $\frac{2}{1}\frac{0}{9}$; palatine bones and intermaxillaries broad, as seen in the roof of the beak. Length of this skull 7, of nose $2\frac{1}{2}$, width at notch $2\frac{1}{2}$ inches.

The skulls are much alike, but they may be two species characterized by the number of the teeth.

7. Phocæna.

Dorsal fin in the middle of the body; skull-nose depressed, broad, the hinder part of the maxilla slightly shelving downwards over the orbits; the intermaxillaries and vomer forming part of the palate; teeth numerous, spathulate, compressed, extending nearly the whole length of the jaw.

Phocæna, *Rondel. Pisc.* 474; *Gray, Spic. Zool.* 2, 1828; *Zool. Ereb. & Terror*, 30.
Phocæna, sp. *Cuvier*; *F. Cuvier*; *Wagler, N. S. Amph.* 34.
Delphinus, sp. *Linn.*; *Illiger, Prod.* 143, 1811.

The fœtus of *Phocæna* has two bristles on each side of the nose; as the animal grows, these bristles fall out, and each leaves a small pit on the side of the nose, which Klein (*Hist. Piscium*, i. 24) mistook for the nostrils, as has been well observed by *Prof. Eschricht*, 250.

Mr. F. Knox gives many details of the anatomy of this species in his 'Catalogue of Preparations relative to Whales,' 1838, p. 32.

1. Phocæna communis. Common Porpoise.

Black.

Phocæna, *Rondel. Pisc.* 473; *Gesner, Aquat.* 837, fig.; *Aldrov. Pisc.* 719, fig.
Phocæna Rondeletii, *Willoughb. Pisc.* 31. t. A 1. f. 2.
Tursio Marsouin, *Bellon. Aquat.* 16, fig.
Tursio Plinii, *H. N.* ix. 9.
Phocæna communis, *Lesson, Man.* 413; *F. Cuv. Cetac.* 172; *Gray, List Mam. B. M.* 104; *Spic. Zool.* 2, 1828; *Zool. E. & T.* 30; *Jackson, Boston Journ. N. H.* v. 167.
Delphinus Phocæna, *Linn. Faun. Suec.* 17; *S. N.* i. 108; *Schreb. Saugth.* t. 342; *Bonnat. Cet.* 18. t. 1. t. 10. f. 1; *Desm. Mam.* 516; *Fischer, Syn.* 510; *Cuv. Oss. Foss.* v. t. 21. f. 1, 2, *skull.*
Marsouin commun, *Cuvier, Menag. Mus.* t. *Reg. Anim.* i. 279.
Porpesse, *Shaw, Zool.* ii. 504. t. 229, 230, 231.
Anat. *Knox, Cat. Prep. Whales*, 1838, p. 37; *Jackson, Boston Journ. N. H.* v. 167; *Sibson, Trans. Roy. Soc.* 1848; *Bonnat. Cet.* t. ; *Lacep. Cet.* t. 20. f. 2, *skel.*
Inhab. North Sea. Mouth of rivers Thames and Severn.

a. Thames. Presented by Mr. Leadbeater.
b. Skull. From Dr. Mantell's Collection.
c, d, e. Stuffed. Thames. Presented by Messrs. J. and C. Grove.
f. Skeleton. English Coast.

Mr. Knox (*Cat. Prep. Whales*, p. 32, 1838) gives the particulars of two skeletons of female specimens:—1. Of a gravid female taken in the Firth of Forth, 56 inches long and 34 inches

in circumference. Teeth $\frac{2}{2}\frac{6}{5}-\frac{2}{2}\frac{6}{5}$. Vertebræ 65: cervical 7; dorsal and ribs 13; posterior 45. V-shaped bones commencing between the thirty-fourth and thirty-fifth vertebræ. Length of base of cranium 11, of spinal column 42 inches = 53. Weight of cranium 1 lb. 1 oz., of trunk and extremities 2 lb. 15 oz. = 4 lb.

2. Of a female 74 inches long, killed in the Thames: has coracoid clavicles. It also differs from the preceding in the following particulars:—There are only twelve ribs on each side (24); the vertebræ towards the caudal extremity are much more slender and delicate, while the transverse and spinous processes of the dorsal and lumbar vertebræ are much broader and stronger; the cranium is considerably smaller and narrower. The elevation of the occipital bone less, but more rounded. Condyles of the occipital bone greatly less, yet the weight of both skeletons is nearly equal. There are only 64 vertebræ, but the last is evidently wanting, and has been lost.—*Knox*, p. 32. A fœtus was taken from the uterus of the female porpoise (whose skeleton, No. 1, is above referred to from the Firth of Forth); it measured, from snout to centre of tail, 26 inches; circumference 16 inches. Its great bulk, considering the size of the parent porpoise (56 inches), is remarkable, and renders the supposition that the porpoise does not suckle her young extremely probable.—*Knox*, p. 34. n. 104.

This difference in the skeleton shows the probability of there being two species confounded on our shores, or else that there are great variations in the bones of this animal even of the same sex.

c. Upper and lower jaw with many teeth, rarely deciduous with age. Wings of the jaw-bone horizontally produced over the orbits. Delphinina.

Delphinina, *Gray, Zool. Ereb. & Terror*, 30.

** Head rounded in front, not beaked. Nose of skull scarcely so long as the brain-cavity. Dorsal distinct.*

8. Grampus, *Gray*.

Head rounded, forehead rather convex. Teeth conical, often truncated in the front half of the lower jaw. Dorsal distinct, low, rather behind the middle of the back. Pectorals ovate, rather elongate.

Skull depressed; intermaxillaries dilated, covering great part of the maxilla above, rather swollen behind in front of the blowers, the hinder wing of the maxilla horizontal and rather thickened and bent up over the orbit, and slightly dilated and reflexed just in front of the notch.

Grampus, pars, *Gray, Spic. Zool.* 2, 1828.
Grampus, *Gray, Zool. E. & T.* 30, 1847.

Cetus, sp. (aries), *Wagler, N. S. Amph.* 33.
Phocæna, sp. *Wagler, N. S. Amph.* 34.

1. Grampus Cuvieri. Cuvier's Grampus.

Bluish black; beneath dirty white, passing into the black on the sides; nose of the skull broad at the base, narrow in front and concave on the sides, not quite half the entire length of the skull.

Grampus Cuvieri, *Gray, Ann. N. H.* 1846; *Cat. Ost. B. M.* 36; *Zool. Erebus & Terror*, 31.
Delphinus griseus, *Cuv. R. A.* i. 290; *Ann. Mus.* xix. t. 1. f. 1, not good, cop. *Schreb.* t. 345. f. 1; *Oss. Foss.* v. t. 22. f. 1, 2; *F. Cuvier, Cetac.* 182. t. 12. f. 2; *Desm. Mam.* 518; *Fischer, Syn. Mam.* 512.
Phocæna grisea, *Lesson, Man.* 413; *Wagler, S. N. Amph.* 34.
Grampus griseus, *Gray, Spic. Zool.* 2, 1828.
? Grampus, *Hunter, Phil. Trans.* 1787, t. 17.
? Delphinus ventricosus. *Lacep. Cet.* 311. t. 15. f. 3; *Schreb. Saugth.* t. 341, both copied from *Hunter*, t. 17.
? Phocæna ventricosa, *Lesson, Man.* 415, from *Hunter*.
Marsouin, *Duhamel, Pech.* iv. t. 9. f. 5.
Anat. *Cuv. Oss. Foss.* v. t. 22. f. 1, 2.
Inhab. North Sea. Coast of France, Rochelle, *D'Orbigny*, 1822. Isle of Wight, Hampshire, *Rev. C. Bury*, 1845.

a. Skull. Isle of Wight. Presented by the Rev. C. Bury.

The measurements of D'Orbigny's (1st) old and (2nd) young specimens.

	ft.	in.	
Length, entire	10	0	7 feet.
„ to blowers	2	6	
„ to pectoral fin	3	6	
„ of pectorals	3	0	
„ of dorsal	5	0?	
Width of tail			
Height of dorsal	1	2	
Skull.			
Length, entire	17	6	
„ of nose	8	0	
„ of teeth, series lower jaw	2	3	
„ of lower jaw	12	0	
Width at notch	7	0	
„ at orbit	11	0	
„ at middle of nose	3	10	
„ of intermaxillary	3	3	
Height at occiput	9	0	

This species loses its upper teeth at an early period and preserves only a few of its lower ones. The dorsal fin is lower and further back than in *D. Orca, Cuv. R. A.* i. 290.

M. F. Cuvier (*Cetac.* 193) has referred the *Marsouin* of Duhamel (*Pech.* iv. t. 9. f. 5) to *D. globiceps*, but M. Duhamel particularly observes that the pectoral and dorsal were nearly equidistant from the head, and that the under side is paler than the back, golden green, not white, which does not agree with *D. melas*. In both these points it suits better with this species.

This species was first described from a skeleton and drawing sent from Brest to Paris. The bad colouring of the drawing induced M. Cuvier to call it *D. griseus*, but it is black and not grey. M. F. Cuvier regards it as distinct from *D. aries* of Risso, which his brother thought was the same.—*F. Cuv. Cetac.* 184.

In D'Orbigny's specimens the dorsal was injured, and in two of them nearly destroyed. The young, 7 feet long, had eight conical, acute teeth. The older, two males and one female, 10 feet long, had only six or seven blunt, carious teeth. The upper jaw longest (4 inches), without any indication of teeth, even in the young one, but with a slight groove for the reception of the edge of the lower jaw.

M. D'Orbigny says that this species has "most affinity in the external form to the *Grampus* of Hunter, t. 17, which Lacepède called *D. ventricosus*, but differs essentially in the total absence of teeth in the upper, and by the number in the lower jaw." Hunter does not figure any teeth in the upper and only a few in the lower jaw.

2. GRAMPUS RISSOANUS. RISSO'S GRAMPUS.

Bluish white, with irregular, brown-edged, scratch-like lines in all directions. Females uniform brown, with similar scratches.

Delphinus Rissoanus, *Laur. F. Cuv. Mam. Lithog.* t. . *Cetac.* 196. t. 12. f. 1; *Schlegel, Abh.* 33; *Fischer, Syn. Mam.* 512; *Desm. Mam.* 519.

D. de Risso, *Cuv. Ann. Mus.* xix. 12. f. 4, cop. *Schreb.* t. 345. f. 4; *Risso, Ann. Mus. H. N.* xix. t. 1, 2; *Europ. Merid.* 23.

Delphinus aries, *Risso, Cuv. Ann. Mus.* xix. 12. t. 1. f. 4.

G. Rissii, *Jard. Nat. Lib.* vi. 219. t. 18.

Cetus (? ——), *Wagler, N. Syst. Amph.* 33.

Phocæna Rissoanus, *Lesson, Man.* 416.

Grampus Rissoanus, *Gray, Zool. Erebus & Terror*, 31.

Var. 1. Dorsal, pectoral, tail, and hinder part of the body below, varied with black.—*F. Cuv. l. c.* f. 13. f. 1, male.

Inhab. Nice. *Risso, Laurillard.*

M. Laurillard observes, the teeth are conical, early deciduous, especially of the upper jaw. He gives the following measurements:—

	ft.	in.
Length, entire.....	9	0
„ of head	1	$6\frac{1}{2}$
Height of dorsal....	0	9

Lesson refers this species to the genus *Globiocephalus*, but the position of the dorsal and the form of the pectoral, as well as the description of the teeth, make me believe it rather belongs to this genus. M. Cuvier observes that his *D. griseus* is only described from a bad drawing of this species, but M. F. Cuvier, who had a new description, and M. Laurillard, consider them as distinct.—*Reg. Anim.* i. 290; *F. Cuv. Cetac.* 184.

In the Paris Museum there is a skull from Rochelle, sent by M. D'Orbigny, and a second from Nice, brought by M. Laurillard, which greatly resemble one another.

3. Grampus Richardsonii.

Lower jaw straight, regularly diverging, scarcely bulging on the side behind, united by a rather long, wide symphysis in front; obliquely truncated in front, with a rather prominent, tuberous gonyx. Teeth 4–4, rather large, far apart, conical, tapering at the tip, but subcylindrical at the base.

Grampus, n.s., *Gray, Zool. Erebus & Terror*, 31.
Inhab. ——? British Museum, from Haslar Hospital.

a. Lower jaw. Presented by the Haslar Hospital Museum.

This jaw appears to differ from the lower jaw of *G. Cuvieri* in being much thicker at the symphysis, very obliquely truncated in front, and rather projecting below. Teeth 4–4, large, conical, rather acute and recurved; the upper edge behind the teeth round, with many minute holes on the edge. It measures as follows:—

	ft.	in.
Length, entire	16	0
„ front truncation ..	2	0
„ of teeth series	2	0
Breast, near condyle	4	0
„ in front	1	0
Width at condyles.....	11	6

4. Grampus Sakamata. The Sakamata.

D. Orca, *Schlegel, Faun. Jap.* 25.
Grampus Sakamata, *Gray, Zool. Erebus & Terror*, 31.
Inhab. Japan.

M. Schlegel (*Faun. Japon.* 25) described a dolphin found on the coast of Japan, and called *Sakamata kuzira*. It is said to have a high dorsal, and to be black with white spots on the belly, back and sides, near the pectoral fin. The eyelids and lips pale purple, the latter often white-spotted; the head is rounded, the upper jaw pointed and toothless; the lower short and narrow and toothed.

Schlegel, who refers this species to *D. Orca*, says the wanting teeth in the upper jaw is a mistake; but it is probably a *Grampus*, which often wants them in that jaw. I do not see why one part of the description should be relied on and not the other.

In the Museum of the College of Surgeons is a skull (No. 1138, Hunterian) apparently belonging to another species of this genus.

The teeth are 12–12, small, conical, curved, very acute. Nose rather concave on the sides; intermaxillaries nearly as wide as the jaws. Lower jaw obliquely truncated in front. Length, entire, 24 inches; of nose 12, of tooth-line 7, of lower jaw 19 width at notch 9, of middle of beak $6\frac{1}{2}$, at orbits $15\frac{1}{2}$ inches.

9. Globiocephalus.

Head round, forehead very prominent. Teeth conical, large only on the front half of the jaws; deciduous in the old one. Upper jaw largest? Pectoral narrow, linear-ovate, low down. Dorsal falcate, about the middle of the back.

Skull flattened and concave in front of the blower; nose broad, flattened, rugose above; intermaxillary bones very broad, covering the greater part of the upper surface of the upper jaws; the hinder wing of the jaw-bone horizontal and bent up on the edge over the orbits, and slightly expanded and reflexed just in front of the orbit notch.

The sucking young have no visible teeth; the adults have teeth in each jaw, but the aged individuals have generally lost them in both.—*Fleming.*

Globiocephalus, *Lesson*; *Gray, Zool. Ereb. & Terror*, 32, 1846.
Globiocephala, *Lesson, N. Tab. R. A.* 200, 1842.
Physeter, sp. *Risso.*
Grampus, pars, *Gray, Spic. Zool.* 2, 1828.
Cetus, sp. *Wagler, N. S. Amph.* 33, 1830.
Delphinus, sp. *Cuvier.*

The skull of the young has no bony *tentorium*, though in the old specimens it is well-marked.—*Jackson, Bost. Journ. N. H.* v. 167.

1. Globiocephalus Svineval. The Pilot Whale.

Black, streak from throat to vent (sometimes dilated into a cross band) white; teeth $\frac{2}{2}\frac{2}{2}$ to $\frac{4}{4}\frac{4}{4}$, rarely $\frac{2}{4}\frac{2}{4}$.—*Fleming.* The upper surface of the maxillaries and intermaxillaries rugose in front; intermaxillaries form a triangular patch in front of the palate. Second and third cervical vertebræ co-ossified.

Petit Cachalot, *Daub. Acad. Sci.* 1782, t. 1, cop. *Bonnat. Cetol.* t.
Cachalot Svineval, *Lacep. Cet.* 216, not *Syn. Sibbald.*
Narwal edente, *Camper, Cetac.* t. 33, 34.
Grampus globiceps, *Gray, Spic. Zool.* 2, 1828.
Ca'ing Whale, *Neill, Orkney and Shetland,* 1836, 221.
Delphinus Melas, *Trail, Nichol. Journ.* xxii. 1809, 21. t.
D. deductor, "*Trail,*" *Scoresby, Arct. Reg.* i. 496. t. 13. f. 1, 1820, cop. *Jardine Whales,* t. 17; *Bell, B. Q.* 483. fig.
D. globiceps, *Cuv. Ann. Mus.* xix. t. 1. f. 2. ♀, 1812 (cop. *Schreb.* t. 345. f. 2, 3); *Oss. Foss.* v. 285. t. 21. f. 11, 13; *Schreb. Saugth.* t. 345; *Blainville, Journ. Phys.* 1817, 74. t. 6; *Desm. Mamm.* 819; *Fischer, Syn. Mamm.* 512.
Phocæna globiceps, *Lesson, Man.* 416.
Delphinus Grampus, *Cat. Mus. Col. Surg.* n. 1137.
Globiocephalus Svineval, *Gray, Zool. Ereb. & Terror,* 32.
Anat. *Daubenton, Mem. Acad. Sci.* 1782, t. 4, cop. *Lacep. Cet.* t. 9. f. 2; *Bonnat. Cet.* t. 6. f. 2.
Black Whale, Howling Whale, Social Whale, Bottle-head, *Sailors.*
Hab. North Sea.

a. Skull. Orkneys. Presented by Prof. Trail.
b. Lower jaw half-grown ——?
c. Adult, stuffed. English Coast.

Dr. Fleming gives the following measurements:—

	ft.	in.
Length of animal, entire ..	19	6
„ of pectoral.....	3	6
„ of dorsal	2	3
Width of pectoral	1	6
„ of tail	5	0
Height of dorsal	1	3
Circumference	10	0

The following are the measurements of three skulls, in feet and inches: 1. is in the British Museum, 2. Mus. Coll. Surg. n. 1137, and 3. n. 1138 of the same collection:—

	1.		2.		3.	
	ft.	in.	ft.	in.	ft.	in.
Skull: length of, entire....	28	0	29	0	24	0
„ of nose	15	0	15	0	12	0
„ of teeth, series	9	0	8	6	7	0
„ of lower jaw..	.....		.....		19	0
width at notch.....	11	6	11	0	9	0
„ at orbit	19	6	19	6	15	6
„ of intermaxillary	9	0	7	0		
„ of middle of nose			9	6	6	6
height at occiput....	15	0				

Female suckling, with the young, 4 feet 6 inches long in December (*Watson*), and 7 feet long in January.

Vertebræ 55 :—7 cervical, first free, second and third united by body and partly by lateral process, rest free; 11 dorsal, and 37 posterior.

Var. 1? Delphinus globiceps, *Risso, Europ. Merid.* iii. t. 1. f. 1; *F. Cuv.* 223.

Black, with a grey band on each side from the throat to the vent; head large, round, swollen; jaws equal; teeth $\frac{22}{22}$, round, conical, curved.

Inhab. Nice, *Risso.*

Is probably the same as *D. Svineval*, but M. F. Cuvier regards it as distinct.

2. GLOBIOCEPHALUS INTERMEDIUS. BLACK-FISH.

Teeth $\frac{8}{8}$–$\frac{8}{8}$, several being quite loose. Skin uniform dull slate-colour, belly with an ill-defined, narrow, clouded white streak extending from beneath the jaw to about the anus, being much broader and whiter in some parts than in others, and most so beneath the jaw.

Delphinus intermedius, *Harlan, Journ. Acad. Sci. Philad.* vi. 51. t. 1.

D. Harlani, *Fischer, Syn. Mam.* 656; *Schinz.*

Globiocephalus Melas, *Dekay, Zool. New York,* t.

Phocæna globiceps, *Sampson, Silliman Amer. Journ. Sci.* 3–301, fig.

Delphinus globiceps, *Jackson, Boston Journ. N. H.* v. 160. t. 15. f. 1.

Globiocephalus Svineval var.?, *Gray, Zool. E. & T.* 32.

Black-fish, *American sailors, Neuwied, Voy. Amer. Nord.* iii. 232.

ANAT. *Jackson, Boston Journ. N. H.* v. 160. t. 15. f. 2, *stomach.*

Inhab. Coast of North America.

Weight estimated at 255 lb. Length, from nose to end of tail, 86 inches; to pectoral fin 20, to dorsal 38, to blow-hole 9¼, to eye 9½, to penis 49, to anus 56 inches; span of tail 21; pectoral fin 5½ across the base, 21 inches along the anterior edge, and 6 inches along the posterior; circumference in front of dorsal fin 46; blow-hole concave anteriorly and 1½ inch across from tip to tip; eyes ⅞ of an inch. Vertebræ 58; bodies of six of the cervical co-ossified; 11 dorsal, and posterior to them were 40.—*Jackson, l. c.*

It has been thought that the European and American specimens were the same, but the anatomical descriptions show the following differences:—

1. *American.*—Vertebræ 58: cervical 7 (body of 6 first co-ossified); dorsal 11; posterior 40.—*Jackson, l. c.* 166.

2. *European.*—Vertebræ 55: cervical 7 (body and second and third co-ossified); dorsal 11; posterior 37.—*Cuv. Oss. Foss.* v.

In the Paris Museum there is a skull of this genus from Guadaloupe, named *D. globiceps*. The middle of the intermaxillaries are as wide as the maxillæ. Skull: length, entire, 23½ inches; of nose, 11½; width at notch 8½, at middle of beak 8–9 inches.

3. Globiocephalus affinis. Smaller Pilot Whale.

Teeth $\frac{12}{12}$, small, conical, curved, very acute; nose exactly half as long as the head, rather tapering, and rather concave on the sides; intermaxillary nearly as wide as the jaw; lower jaw obliquely truncated in front.

Delphinus Grampus, *Cat. Mus. Col. Surg.* n. 1138; *Hunterian Col.* n. 686.
Delphinus Melas, *Owen, British Fossil Mammalia.*
Globiocephalus affinis, *Gray, Zool. Ereb. & Terror*, 32.
Inhab. ——? Mus. Col. Surg.

	ft.	in.
Skull: length, entire.....	24	0
„ of nose	12	3
„ teeth-line	7	0
„ lower jaw	19	0
width of nose at notch ..	9	0
„ of middle of nose .	6	6
„ at orbits	15	6

This is probably a young specimen of *Globiocephalus Svineval.* The skull differs in being rather slenderer in front, and in the intermaxillary not being rugose in front. In the *Catalogue of the Mus. Col. Surg.* 165, n. 1138, it is called "the skull of a small

Grampus," Hunterian, and n. 1136, "the skull of a large Grampus," Hunterian. It appears to be the skull which Mr. Owen gives the measurement of, under the name of *D. Melas*, in his account of *Phocæna crassidens*, in the work on British Fossil Mammalia.

4. Globiocephalus Sieboldii. The Naiso-gota.

Delphinus globiceps, *Temm. Fauna Japon.* t. 27.
Globiocephalus Sieboldii, *Gray, Zool. Ereb. & Terror*, 32.
Anat. *Fauna Japon.* t. 27, *skull, &c.*

M. Siebold brought with him a figure of a very young specimen, 5 feet 6 inches long, of this species, made by M. Villeneuve, which is copied in the *Fauna Japonica*, and a complete skeleton.

M. Temminck regards it as undoubtedly the same as the European, but yet allows that there are some differences between it and the adult specimen observed on the European shores. The forehead is less swollen, and the pectoral fins are rather larger than in *G. Svineval* of Europe. This species is called in Japan *Naiso-gota*.

The Japanese distinguish two other species:—1. *Sibo golo*, which is purple, with a white spot behind the dorsal fin, and the lower jaw furnished with many plaits. 2. *Ohanan golo*, black, with a larger muzzle and more spacious mouth; the dorsal $\frac{1}{3}$ from head, back edge before the middle; pectoral $\frac{1}{4}$ from head; pectoral $\frac{1}{6}$ length; length of skull 15·0; beak 6·9; width at notch 4·9.

The *Delphinus globiceps* (*Grant, Proc. Zool. Soc.* 1833, 65), brought by Capt. Delvitte from the North Pacific, which Schlegel thought might be this species, is a species of *Orca*.

5. Globiocephalus macrorhynchus. The South-sea Black-fish.

Uniform black. Nose of skull short and broad, rounded in front, nearly as broad in the middle as at the preorbital notch. Teeth subcylindrical, $\frac{8}{8}$. Lower jaw rounded in front. Length 16, rarely 20 feet.

Killer or Blackfish, *J. Bennett, MSS. Mus. Col. Surg.*
Black-fish of South Sea Whalers, Phocæna, sp. *Bennett, Whaling Voyage*, ii. 233, fig.
Black-fish, Phocæna nigra, *Clarke in Nunn, Narrat. of Wreck of Favourite*, 184, fig. (1850, 8vo).
Globiocephalus macrorhynchus, *Gray, Zool. Ereb. & Terror*, 33.
Black-fish, *Colnett, Voy. S. Pacific.*
Inhab. South Seas. Skull, Mus. Col. Surg. Presented by J. Bennett, Esq.

	in.	lin.
Skull: Length, entire	24	0
„ nose	11	6
„ from tip of nose to back of palate	14	6
„ teeth line	5	6
„ lower jaw	16	6
Breadth at preorbital notch	9	6
„ at middle of nose	9	0
„ at temple	17	0
„ of intermaxillary	6	0

Head thick, square, and short; the snout blunt and but little prominent. The angles of the lips are curved upwards, giving the physiognomy an innocent smiling expression. Body clumsy, round and broad, and the termination of the trunk in the tail-fin rather abrupt.—*Bennett, l. c.* 233.

Colnett (*Voy. S. Pacific*) speaks of innumerable shoals of Black-fish on the shores of California.

The contents of the stomach were chiefly cuttle-fish.

The *Black-fish* roam about the ocean in very large troops—a solitary individual is occasionally seen—are active and watchful, but betray little concern at ships or boats. They appear to inhabit the greater portion of the aqueous globe, uninfluenced by the remoteness or vicinity of land. We observed examples in many parallels of latitude between the equator and 50° N. and 53° S., in the central part of the Atlantic and Pacific Oceans, as well as off the coast of California and in the Indian Archipelago.

Sperm whalers often attack this species with their boats in order to obtain a supply of oil for ship consumption; some risk however attends their capture, for when harpooned they will sometimes leap into a boat. A Black-fish of average size will produce from 30 to 35 gallons of oil, which in its most recent state has a dark colour and an unpleasant odour.—*Bennett*, 235.

It is probable that Mr. Bennett in the above range confounded together under the name of *Black-fish* more than one species.

* *Doubtful Species.*

? Delphinus feres, *Bonnat. Cetac.* 27.

Blackish; teeth $\frac{1}{1}\frac{8}{8}$, large and small, curved, compressed before and behind; crown oval, rounded and divided into two lobes by a groove which extends their whole length.

Inhab. Mediterranean, Malta.

Length 14 feet. Skull: length 1 foot 10 inches, breadth 1 foot

5 inches; length of teeth 1 inch, breadth of line ½ inch. Cuvier thinks this is probably *Orca gladiator*.

10. Orca.

Teeth conical, acute, large, occupying the whole edge nearly to the notch, permanent. Dorsal fin high, falcate, in the middle of the back. Pectoral broad, ovate.

Skull rounded; the hinder wing of the maxilla horizontally spread over the orbits, the intermaxillaries only half the width of the jaw-bones; forehead flattened. Palate convex.

Orca, *Rondel, Pisc.*; *Gray, Zool. Ereb. & Terror*, 33, 1846.
Phocæna, sp., *Wagler, N. S. Amph.* 34.
Delphinus, sp., *Linn.*; *Illiger, Prod.* 143, 1811.
Grampus, pars, *Gray, Spic. Zool.* 2, 1828.

Delphinus Orca, *Linn. S. Nat.* i. 108, is evidently from Orca, *Belon, Pisc.* 18, *Rond. Pisc.* 483, *fig.*—, copied by *Gesner, Aquat.* 748. In the *Mantissa*, ii. 523, the reference to the *Schwerdt fische* of Anderson and some other whalers is added, and probably from them is taken the following note: "Bellum gerit cum Phocis, quas ope gladii dorsalis e lapidibus detrudit; Balænarum Phocarumque tyrannus, qua turmatim adgreditur. Pinna dorsalis est spina ensiformis, sex pedalis, cute vestita, basi latior."—*Mant.* ii. 523. Bonnaterre gave the name of *Delphinus gladiator* to Anderson's figure, which represents the dorsal fin as situated near the nape.

Cuvier believed that the *Orca* of the ancients was probably a Cachalot, and that the Killer is the *Aries marinus* of Pliny, Ælian and the Latins, who compared the white streak behind the eye to a horn. Desmarest, *Mam.* 515, confines the name *Delphinus Orca* to the animal intended by the ancients, and characterizes it —"Museau conformé comme celui de Dauphin vulgaire; dents larges et crenulées sur leurs bords," being a translation of Artedi (*Gen. Piscium*, 76, 3), "D. rostro sursum repando, dentibus latis serratis."

O. Fabricius observes that he never saw *D. Orca*; but Prof. Eschricht believes the *Physeter microps* of O. Fabricius to be the Killer, or *D. Orca* of Linnæus (*Dan. Trans.* xii.).

1. Orca gladiator. The Killer.

Black; circumscribed spot behind eye, spot on belly and under side of tail white. Nose of skull nearly twice as long as the width of the notch. Teeth $\frac{11}{11}$, large, conical, slightly hooked.

De Balænis minoribus in utraque maxilla dentatis qu. Orcæ vocantur, *Sibbald, Phal.* 6. t. 2, f. 3, tooth.

Delphinus Orca, *Linn. Mant. Plant.* ii. 523; *S. N.* i. 108; *Schreb. Saugth.* t. 340; *Fischer, Syn. Man.* 511; *Mag. Nat. Hist.* iv. 329. fig. 2; *Schlegel, Abh.* ii. t. 7, 8, from life.
Grampus, *Hunter, Phil. Trans.* 1787, t. 16, cop. *Bell, Brit. Anim.* fig. at p. ; *Bonnat. Cetac.* t. 12. f. 1.
Cachalot d'Anderson, *Duhamel.*
D. Duhamelii, *Lacep. Pisc.* 314. t. 9. f. 1, good.
Phocæna Orca, *Wagler, N. S. Amph.* 34.
? Delphinus gladiator, *Bonnat. Cet.* 23; *Lacep. Cetac.* 302. t. 5. f. 3.
D. Grampus, *Desm. N. Dict. H. N.* ix. 168; *Mamm.* 517, from *Hunter.*
D. Grampus (The Large Grampus), *Owen, Cat. Mus. Coll. Surg.* n. 1136.
Phocæna gladiator, *Lesson, Man.* 414.
Phocæna Grampus, *Lesson, Man.* 415.
Orca, *Rondel, Pisc.* 483. fig.; *Gesner, Aquat.* 748. fig. from *Rondel.*
Grampus, *Shaw, Zool.* ii. 513. t. 232, lower fig.
? Agluck, *Pallas, Zool. Ross. Asiat.* 305.
? Aguluch, *Chamisso, Nov. Act. Acad. Nat. Cur.* xii. 262. t. 20. f. 9?
Anat. *Cuv. Oss. Foss.* v. t. 22. f. 3, 4; *R. A.* i. 289.
Inhab. North Sea.

a. Skull. Coast of Essex. From Mr. Cross's Collection.
b. Skeleton 20 feet long. From Weymouth. Presented by R. Pearce, Esq.
c. Skull. From Mr. Turner's Collection.

There is a skull in Mr. Bell's museum, from a male 19 feet long, taken in Lynn Harbour, Nov. 1830. The animal was described in *Loudon's Mag. Nat. Hist.* v. The following are the measurements of this specimen:—

	ft.	in.
Length along curve.....	21	3
„ straight	19	0
„ to dorsal fin	8	2
„ to pectoral fin ..	4	0
Height of dorsal	4	0
„ to dorsal	13	1
Length of dorsal.....	2	4
„ of pectoral	4	0
Breadth of pectoral.....	2	8

The following are the measurements of two skulls; No. 1, the specimen *a*, from Essex, in the British Museum, and No. 2, specimen No. 1136 in the Museum of the College of Surgeons:—

	No. 1.	No. 2.
	in.	in.
Skull: Length, entire	33	41½
„ of nose	19½	22¼
„ of teeth line	14½	20
„ of lower jaw	27¼	35
Breadth at notch	10½	14
„ at orbit	18	
„ at temple	18	
„ at middle of beak....	9½	
„ of intermaxillary		
„ in front	4	6
„ in middle	3½	3½

The skull, n. 1136, of the Museum of the College of Surgeons (called the Large Grampus, *D. Grampus* in the catalogue), is of most colossal size. It formed part of the Hunterian collection, and is probably the skull of the large specimen, 31 feet long, killed at Greenwich in 1793.—*Banks in Lacepède.* It has teeth $\frac{1}{1}\frac{2}{2}$, very large, nearly to the notch. Intermaxillary rather dilated, broader over the front of the nose.

Fabricius says, "The *Aidluit* has in the lower jaw 22 teeth, 11 on each side, arched, falciform, hollow internally as far as the point, projecting scarcely a third part (and this visible part is enamelled, compressed-conical, with the point sharp, curved inwardly and at the same time verging a little backwards; but the concealed part broader and having two parts, compressed anteriorly and posteriorly, and especially on the side nearest the throat, channeled); of the length of a finger, and 1½ inch broad, the middle ones larger, the anterior and posterior smaller. Beak rather obtuse. Beside the pectoral fins it has a long, erect dorsal fin. In size it is to be considered as amongst the smaller whales. Skin glabrous, black; the fat thick, but little oily; flesh red." —*Fabricius, Faun. Grœnl.*

Of the *Aidluit* wonderful stories are told: the following is not the most extraordinary. "Where these appear all the seals disappear, else they make desperate slaughter among them, for they have such sagacity and skill in catching them with the mouth and fins, that they are sometimes seen loaded with five at a time, one in the mouth, a couple under each fin and one under the back fin."—*Crantz, Greenland,* i. 116.

2. Orca crassidens. The Lincolnshire Killer.

Intermaxillaries rugose in front. Teeth $\frac{10}{10}$, large, conical, rather acute (all but the front lower false), near to the preorbital

notch. Lower jaw very depressed and broad in front at the symphysis.

Phocæna crassidens, *Owen, Brit. Fossil Mam.* 516. f. 213, 214, 216.

Orca crassidens, *Gray, Zool. Erebus & Terror*, 33.

Inhab. Fens of Lincolnshire. Fossil skull in Mus. Stamford (now Mus. Coll. Surg.?), of the following measurements :—

		in.	lin.
Skull:	Length, entire	23 or 24	0
	„ nose	12	6
	„ teeth line	10	0
	„ lower jaw	21	0
	Breadth at notch	8	6
	„ at middle of beak ..	8	0
	„ of intermaxillaries ..	5	6

In the figure the beak is $1\frac{1}{2}$ the length of the base at the notch, and exactly the length of the skull.

3. Orca Capensis. The Cape Killer.

Skull flattish above, rather concave in the middle before the blow-hole. Nose rather convex on the side, rather tapering in front. Teeth $\frac{1}{1}\frac{2}{2}$, very large, thick, nearly to the preorbital notch, concave on each side, for the reception of the teeth of the opposite jaw, the front upper small, acute, front lower large, worn down, rounded. Intermaxillaries rather dilated, and broader over the front of the nose, contracted behind.

Delphinus globiceps, *Owen, Cat. Mus. Coll. Surg.* 165. n. 1139; *Grant, Proc. Zool. Soc.* 1833, 65.

D. Orca, *Owen, Brit. Fossil Mam.* 516; *Eydoux, Mus. Paris.*

Orca Capensis, *Gray, Zool. Erebus & Terror*, 34. t. 9, skull.

Grampus, *Bennett, Whaling Voyage*, ii. 239.

Inhab. Southern Ocean. Cape of Good Hope, *M. Vilete* (1818), Mus. Coll. Surg. n. 1139. Northern Pacific Ocean, *Capt. Delvitte, R.N.* Chili, *Eydoux*, Mus. Paris.

a. Skull. Northern Pacific Ocean. Presented by the Zoological Society of London. The specimen figured in the *Voyage of the Erebus & Terror*, fig. 9. p. 34.

The following are the measurements, first, of the specimen n. 1139 in the Museum of the College of Surgeons, and secondly, of the skull in the British Museum :—

		in.	lin.	in.	lin.
Skull:	Length, entire	37	0	36	6
	„ of nose	18	0	18	0
	„ of teeth line	14	6	14	6

	in.	lin.	in.	lin.
Length of lower jaw.....	29	6	29	6
Breadth at notch	12	6	12	0
„ at orbit	21	0	21	0
„ at temple above ..	20	0	20	0
„ at middle of beak	10	0	10	0
„ of intermaxillaries	3	9	3	6
„ in front	4	6	4	6
„ in middle	3	3	3	3

The skull in the College of Surgeons appears to be the one which Mr. Owen gives the measurement of as *D. Orca*, in his account of *Phocæna crassidens* in the British Fossil Mammalia.

The Grampus of the South Sea whalers is very frequently noticed in the Pacific Ocean, from the Equator to 44° N. and 10° S. latitude. They occur in herds, and their appearance is supposed to indicate the resorts of the Cachalots. Whether this whale is identical with the Grampus (*Phocæna Orca*) of the North Sea may be fairly questioned; but should it prove to be so, the geographic range of the latter species must be indeed extensive. —*Bennett, Whaling Voyage*, ii. 238.

Mr. Bennett mentions a *Killer* which appears in small bands, chiefly in the vicinity of the Equator, of a moderate size, spout much like the Cachalot, and has a tall erect dorsal fin.—*Bennett, l. c.* 239.

4. Orca intermedia. Small Killer.

Nose of skull half the entire length. Teeth $\frac{11}{11}$, long, conical.

Delphinus intermedius, *Gray, Ann. Phil.* 1827, 396, not *Harlan.*
Orca intermedia, *Gray, Zool. E. & T.* 34. t. 8, skull.
Grampus intermedius, *Gray, List Mam. B. M.* 104.

a. Skull ——? The specimen described in *Annals of Phil.* and described and figured in the *Voyage of the Erebus and Terror.* The following are its measurements:—

	in.	lin.
Skull: Length, entire	14	0
„ of nose	7	0
„ of teeth line	5	6
„ of lower jaw	11	0
Breadth at orbits	8	3
„ at notch	4	6
„ at middle of beak ..	0	9

This skull, which has all the appearance of being that of a full-grown animal, is just one quarter the length and breadth of the skull of the common Killer (*Orca gladiator*).

** *Head beaked. Nose of skull longer than the brain-cavity.*

11. Lagenorhynchus, *Gray*.

Head rather convex, gradually sloping into the beak in front. Beak short, tapering in front. Lower jaw rather longest. Body elongate, tapering behind, largest at the pectoral fins. Pectoral fins rather far back, rather elongate and slightly falcate. Dorsal fin high, falcate, rather behind the middle of the back. The back with a low, rounded, fin-like ridge near the tail. Tail-lobes rather narrow, elongate. Skull rather depressed, the hinder ends of the maxillary bones expanded, horizontal, and rather thickened on the edge. The nose is short, broad, flat above and rather narrowed in front, and scarcely longer than the length of the brain-cavity. The triangle in front of the blowers is elongate, and reaches beyond the middle of the nose of the skull, and the intermaxillaries are separated by a deep groove filled with cartilage.

Lagenorhynchus, *Gray, Zool. Erebus & Terror*, 34, 1846.
Grampus, pars, *Gray, Spic. Zool.* 2, 1828.
Delphinus, sp., *Brightwell, Ann. & Mag. N. H.* 1846.

This genus is easily known from *Delphinus* by the lowness of the forehead, the short and depressed form of the beak, the posterior position of the dorsal fin, the body being attenuated behind; and by the breadth, and flat, expanded form of the nose of the skull.

The *os hyoides* of *L. leucopleurus* is large and broad.

† *Beak very short; nose of skull only as long as head; teeth nearly to the notch.*

1. Lagenorhynchus leucopleurus. White-sided Bottle-nose.

Skull: brain-cavity large, high at the top behind the blow-hole; nose nearly as long as the brain-cavity, gradually and regularly tapering on each side; triangle in front of the blower flattened and concave behind, with a slightly-raised, lozenge-shaped space in the front half.

Above bluish black, beneath white, with a large, oblique, grey or white longitudinal streak on hinder part of each side. Teeth $\frac{2}{2}\frac{8}{8}$, small, acute, curved.

Delphinus Tursio, *Knox, Cat. Prepar. Whale*, 29, 1838.
Delphinus leucopleurus, *Rasch, Mag. Zool.* 1843, 369; *Nilsson, Skand. Fauna*, i. 598.

Lagenorhynchus leucopleurus, *Gray, Zool. Erebus and Terror*, 34. t. 3, fœtus; t. 12, skull; t. 26. f. 3, tongue.
Inhab. North Sea. Orkney, *Knox*, 1835. Gulf of Christiania, 1843.

a. Skeleton. Greenland. From Mr. Brandt's Collection.
The specimen figured in the *Voyage of the Erebus and Terror*.

b. Fœtus. North Sea. From Mr. Brandt's Collection.
The fœtus has six bristles on each of the upper lips, the hinder one being rather farther from the rest than the others are apart, which are equally placed, and of the same size. The tongue (tab. 26. f. 3) is flat on the top and as wide as the space between the sides of the jaws, with a regular sharp denticulated edge on each side, and with a rather larger, conical, separate tubercle in front. The teeth are not developed through the gums. The nose is nearly $\frac{1}{5}$ the length of the distance between the end of the nose and the eye. The hinder part of the back has a rather thick convexity, like a long, low, rounded, second dorsal fin just before the tail; the same part of the fœtus of *Delphinus* (*Delphis*?) and *Steno*? *fuscus* has the part very much compressed, and fined off to a very thin, knife-like edge.

c. Skeleton. North Sea. From Mr. Brandt's Collection.
The skull is at once known from the skull of the *L. albirostris*, at Norwich, by being smaller and the nose rather narrower, and especially by the hinder part of the intermaxillaries, which form the triangle in front of the blower, being flattened and concave instead of swollen and convex. Length, entire, 16; of nose, $8\frac{1}{2}$; of lower jaw, 13 inches. Breadth at orbit, $8\frac{1}{4}$; at notch, 4; at middle of beak, $2\frac{3}{4}$ inches.
Mr. Knox gives the following description and measurement of a female sent from the Orkneys in May 1835. It weighed 14 stone. Length along margin from snout to centre of tail, $77\frac{1}{4}$ inches; circumference, anterior, to dorsal fluke, $38\frac{1}{2}$; length of pectoral extremity free, 10; breadth from tip to tip of tail, 14; length from snout to angle of mouth, 9; greatest possible gape, $3\frac{1}{2}$ inches. Length of cranium, 15; of spinal column, $55\frac{1}{2}=70\frac{1}{2}$ inches. Weight of skeleton, $7\frac{1}{2}$ lbs. Teeth, $\frac{30}{30}-\frac{30}{30}=120$. Vertebræ 81: cervical 7; dorsal 15; posterior 59. V-shaped bones commencing between the fortieth and forty-first vertebra; pelvis rudimentary, consisting of two cylindrical bones; pelvis extremities not developed. The external opening of the nostrils near the vertex of the head was crescent-shaped, and placed transversely; the dorsal fluke was midway between the snout and tail.—*Knox*.
The skeleton of this specimen is now in the Museum of the

University of Edinburgh. The first, second and third cervical vertebræ are united by the spinous processes, the second and rest are thin. The palate smooth, not grooved. Length of skull, 15½ inches; of nose, 7½; of lower jaw, 10 inches. Width of skull at notch, 8¾; at orbit, 8; at middle of beak, 3 inches. Nose of skull twice as long as the width at notch. Intermaxillars narrowed in front; the skull has two large foramina on the flat part of the temple on each side, instead of the single one in the skull from Christiania.

†† *Beak moderate; nose of skull only as long as head; teeth not quite to the notch.*

2. LAGENORHYNCHUS ALBIROSTRIS. WHITE-BEAKED BOTTLE-NOSE.

Upper part and sides very rich deep-velvet black; external cuticle soft and silky, so thin and delicate as to be easily rubbed off; nose, a well-defined line above upper jaw, the whole under jaw and belly cream-colour, varied with chalky white; fins and tail black; teeth $\frac{2}{2}\frac{5}{5}$, small, curved; jaws moderately elongate, lower rather the longest; blow-hole horseshoe-shaped and convex towards the head; nose of skull as long as the head cavity, gradually and evenly tapering to a rather rounded point in front, the edge rather reflexed on each side behind; the triangle in front of the blower convex and swollen on each side behind, smooth in front.

Delphinus Tursio, *Brightwell, Ann. Nat. Hist.* 1846, 21. t. 1 ♀.
Delphinus albirostris, *Gray, Ann. & Mag. N. H.* 1846.
Lagenorhynchus albirostris, *Gray, Zool. Erebus and Terror*, t. 10, animal, from *Brightwell's drawing* t. 11, skull, 1846.
Delphinus pseudotursio, *Reichenb. Cetac.* t. 24. f. 7, 6 cop. *Brightwell.*
Delphinus Ibsenii, *Eschricht, Undersögelser over Hvaldyrene 5te Afh.* 73; *och d. Ss. föredrag vid Natuforsk. mötet. i Köpenh.* 1847; *Nilsson, Skand. Fauna*, i. 600.
Inhab. North Sea, coast of Norfolk, *Brightwell*, 1846.

a. Skeleton. Yarmouth. Skull figured in *Voyage of H.M.S. Erebus and Terror*, tab. 11. p. 35. Mr. Brightwell's specimen.
b. Stuffed skin of *a.* Yarmouth.
c. Skeleton. England? Mr. Stevens's Collection.

Measurements of specimen from Yarmouth:—

		in.	lin.
Animal:	Length, entire		(?)
	„ of mouth	9	6
	„ of nose to eye	13	0

	in.	lin.
Length to pectorals	20	0
„ of pectoral	15	0
„ to dorsal	41	0
„ of dorsal	11	6
Height of dorsal	10	0
Width of tail	22	0
Skull: Length, entire	18	0
„ of nose	8	6
Width at orbit	9	5
„ at notches	5	6
„ of middle of beak	3	6
„ of lower jaw at condyles	8	0

††† *Nose of skull longer than the length of the brain-cavity; teeth-line some distance from the notch.*

3. LAGENORHYNCHUS ELECTRA. The ELECTRA.

Skull rather depressed; nose flattened above, expanded and reflexed on the side behind, rather shelving in front; sides rather contracted in the middle, rather longer than the head, and $1\frac{3}{4}$ the length of the width at the notch; intermaxillary broad, flattened, nearly $\frac{3}{8}$ of the width, with a large, wide groove for the greater part of its length; triangle flat, rather concave behind, with a lozenge-shaped, rather raised, rugose space in the front half; teeth $\frac{22}{24}$, rather small, cylindrical, conical, slightly curved, acute, four in an inch; the lower jaw regularly converging, straight on the sides in front, rather swollen behind, and shortly obliquely truncated in front, the gonyx rather produced.

Lagenorhynchus Electra, *Gray, Zool. Erebus and Terror*, 35. t. 13, skull.
Inhab. ——?

a. Skull ——? Purchased.

The specimen figured in the *Voyage of the Erebus and Terror*.

Skull: length, entire, $17\frac{1}{2}$ inches; of head, $8\frac{1}{4}$; of nose, $9\frac{3}{4}$; of teeth line, 7; of lower jaw, $14\frac{1}{2}$; width of temple, $10\frac{1}{4}$ inches; at notch, $5\frac{1}{2}$; at middle of beak, 4; of intermaxillary, $2\frac{1}{2}$.

This skull is very like the former, but it is considerably larger, and the nose is longer in proportion, and the head is much more depressed in the middle and spread out on the sides.

4. LAGENORHYNCHUS CÆRULEO-ALBUS.

Teeth $\frac{22}{20}$; white, back bluish, with oblique streaks on the sides, belly white.

Delphinus cæruleo-albus, *Meyen, Act. Nat. Cur.* xvi. 609. t. 43. f. 2; *Gray, Zool. E. & T.* 42; *Reichenb. Cetac. Anat.* t. 19, skull.
Inhab. East coast of South America, Rio de la Plata.

Length 5 feet 6 inches. Skeleton in Mus. Anat. Mus. Berlin.
Skull: beak $\frac{1}{4}$ longer than the length of the brain-cavity, and rather longer than double the width of the skull at the notch; teeth to the notch: see *fig. Reichenb.*

5. LAGENORHYNCHUS ASIA. The ASIA.

Skull: nose rather depressed, broad, flattened, rather contracted in the middle of each side; triangle concave, with a slightly raised, flat, rugose space in the front half; teeth $\frac{24}{23}$, small.

Lagenorhynchus Asia, *Gray, Zool. Ereb. & Terror*, t. 14, skull.
Inhab. —— ?

a. Skull. Teeth wanting.
The specimen figured in the *Voyage of the Erebus and Terror*, t. 14.
The skull, which is without teeth, very much resembles in the depressed and expanded form of the brain-cavity and shape of the beak, the skull of *L. Electra*, but it differs from it in the beak being rather more acute in front and more contracted on the middle of the sides, and in being rather smaller in size. It may only be a variety of that species. It measures as follows:—

Skull: Length, entire.....	$16\frac{3}{4}$	inches.
„ of nose	9	„
„ of lower jaw ..	$12\frac{1}{2}$	„
Width at orbit	$8\frac{3}{4}$	„
„ at notch	$4\frac{3}{4}$	„
„ middle of beak .	$3\frac{1}{3}$	„

6. LAGENORHYNCHUS ACUTUS. ESCHRICHT'S DOLPHIN.

Body —— ?
Teeth $\frac{32}{31}$; nose of skull half its length and nearly twice as long as wide at the notch; lower jaw obliquely truncated in front.

Delphinus (Grampus) acutus, *Gray, Spic. Zool.* 2, 1828, *from a skull; Fischer, Syn. Mam.* 656.
D. Eschrichtii, *Schlegel, Abh.* 23. t. 1 & 2. f. 4, t. 4. f. 5.
Delphinus leucopleurus, var. *Nilsson, Skand. Fauna*, i. 598.
Lagenorhynchus acutus, *Gray, Zool. E. & T.* 36.
Inhab. North Sea, Faroe Islands, *Eschricht.*

Skulls and skeleton in the Leyden Museum :—Length, entire, 7 in. 2 lin.; of skull 16 lines.

This species was first described by me from a skull in Brooke's Museum, which is now at Leyden, and M. Schlegel has described and figured a skull from a skeleton sent from the Faroe Islands. It differs from the other species of the genus in the nose of the skull being more slender and the teeth more numerous. The teeth series, as in *L. Electra* and *L. Asia*, do not reach to the notch which separates the beak of the skull from the brain-cavity.

Professor Eschricht informs me that the animal is very like *D. leucopleurus*, and Professor Nilsson has considered them as the same.

The skull in Mr. Brooke's collection was 15 inches long, the head 7, the beak being 8 inches, and it was $4\frac{1}{2}$ inches wide at its base; the teeth small and slender; the beak long, attenuated, acute, convex on the sides and flat in the centre above, and with a deep central groove. The teeth $\frac{2}{3}\frac{8}{0}-\frac{3}{3}\frac{8}{0}$, small, slender. The bones in front of the inner nostrils keeled.

7. Lagenorhynchus clanculus.

Skull wide and rather high behind. Beak flat; outline wide at the base, rapidly tapering and acute in front, but rather convex on the sides; sides slightly rounded; the hinder edge near the notch only slightly turned up and rounded; triangle to near the middle of the beak. Lower jaw high behind. Teeth $\frac{3}{3}\frac{3}{3}$, small, cylindrical, curved, rather acute at the tip; the lower front one very small. Intermaxillaries broad, hard.

Lagenorhynchus clanculus, *Gray*, *Proc. Zool. Soc.* 1849, 1; *Zool. Erebus & Terror*, t. 35, ined. Skull.

a. Skull. Pacific Ocean. From Dr. Dickie's Collection.

Length, entire	$14\frac{1}{2}$	inches.
„ beak	$7\frac{1}{4}$	„
„ skull	$7\frac{1}{4}$	„
„ teeth-line	$6\frac{1}{2}$	„
„ lower jaw	$11\frac{1}{4}$	„
„ symphysis, lower jaw	$1\frac{1}{3}$	„
Width at notch	$4\frac{1}{4}$	„
„ orbit	$7\frac{1}{2}$	„
„ middle of beak	$2\frac{1}{2}$	„
„ intermaxillary in middle	$1\frac{1}{3}$	„
„ condyles above	$2\frac{3}{4}$	„

Very peculiar for the elongation and reflexion of the beak before the notch, and the regular beveling of the sides of the beak.

8. LAGENORHYNCHUS THICOLEA.

Skull rather narrow behind. Beak elongate, about $\frac{1}{5}$ longer than the length of the head, rather dilated and concave above behind, with the side edges in front of the notch elongate, keeled and turned up; the middle of the beak flat, with flat shelving sides, the shelving part being broader and forming a slight keel in front. Intermaxillaries flat, gradually tapering. Triangle to near middle of the beak, concave on the sides and keeled in the middle behind. Teeth $\frac{40}{40}$? very slender, curved, elongate, conical, tapering, acute; the front one very small.

Lagenorhynchus Thicolea, *Gray, Proc. Zool. Soc.* 1849; *Zool. Erebus & Terror*, t. 36, ined. Skull.
Inhab. West coast N. America.

a. Skull. Imperfect behind. From Dr. Dickie's Collection.

	in.	lin.	
Length of skull, entire.....	14	6?	(end of nose injured.)
„ beak.....	8	4	
„ teeth-line.....	7	0	
„ lower jaw.....	12	3	(entire.)
Width at orbits.....	7	0	
„ notch.....	3	11	
„ middle of beak	2	2	
„ intermaxillary at middle	1	2	
„ of condyles	3	0	

12. DELPHINAPTERUS.

Head rather convex, shelving towards the nose. Nose rather produced, obscurely divided from the forehead. Dorsal fin none. Back rounded. Pectoral oblong, rather slender. Skull moderate; beak broad, depressed, tapering, rounded above; the triangle before the blower, elongate, extending nearly to the middle of the beak. Palate flat. Teeth conical, tapering, acute, curved. Symphysis of the lower jaw short.

Delphinapterus, *Gray, Zool. Ereb. & Terror*, 35.
Tursio, pars, *Wagler, N. S. Amph.* 34.
Delphinus, sp. *Lacep.*
Delphinapterus, sp. *Blainville*, not *Lacep.*; *Lesson, Voy.*

1. DELPHINAPTERUS PERONII. PERON'S DOLPHIN.

Black; beak, pectoral fins, and under part of body white. Teeth $\frac{38}{38}$–$\frac{40}{40}$.

Delphinus Peronii, *Lacep. Cet.* 517; *F. Cuv. Cetac.* 164; *D'Orb. Voy. Amér. Mérid. Mamm.* t. 21. f. 5.

Delphinapterus leucorhamphus, *Peron, Voy.* i. 217. t. 1.
Delphinapterus Peronii, *Lesson, Voy. Coq.* t. 9. f. 1, bad, cop. *F. Cuvier, Cetac.* 164. t. ; *Jardine, N. Lib.* t. ; *Gray, Zool. E. & T.* t. 15. f. 4.
Dauphin de Peron, *Cuv. Oss. Foss.* v. t. 21. f. 5, 6, skull.
D. bicolor, *Stephenson, MSS. Icon. ined.*; *Gray, Zool. E. & T.* 36. t. 15. f. 1–3, from *Stephenson's drawing*, t. 15. f. 4, from *Lesson.*
Delphinus Peronii or Right Whale Porpoise of the Whalers, *Bennett, Narrat. Whaling Voyage*, ii. 235, fig.
Hab. Higher Southern latitudes. Brazil Bank. Lat. 40° S. to 54° S., long. 50° W., *Bennett.* New Guinea, *Quoy.*

Skull, from Peron, in Mus. Paris. Length 18¼, of beak 10, of teeth-line 8½, of lower jaw 14½. Width at orbit 9, at notch 4½, at middle of beak 2½ inches; teeth ⁴⁄₄⁴, small, slender, six in an inch; beak broad, depressed, rather tapering in front, the sides spongy, the centre hollow, filled with cartilage, broader in front, flattened behind; triangle extending nearly to the middle of the length of the beak; orbit rather shelving above and slightly thickened on the edge; palate flat in front, rather convex behind, without any groove on the sides; lower jaw gradually tapering, angularly shelving and flat on the sides in front; symphysis short, not two inches.

A second skull, in Mus. Paris, brought by M. Housard in 1822, is rather more depressed in the middle in front, and with the triangle reaching near to the middle of the beak: teeth ⁸⁄₈⁸; length, entire, 17·6, of beak 9·6, of lower jaw 14·6; width at notch 4·3, at middle of the beak 2·6. Orbits rather shelving above and slightly thickened on the edge.

Cuvier justly observes, that the beak of Lesson's figures (*Voy. Coq.* t. 9) is too pointed. Lesson also represents the black as only occupying the upper part of the back, as represented in fig. 4 of the plate t. 15 of the *Zoology of the Erebus and Terror*, copied from his plate. M. D'Orbigny, and Bennett, represent the black as down to the base of the fins, and the hinder edge of the fin as black. In the *Zoology of the Erebus and Terror*, t. 15, is given a new figure of the species, copied from a drawing, $\frac{1}{12}$ the natural length, communicated by W. Wilson Saunders, Esq., of Lloyd's, which was made by Dr. Stephenson, during the voyage of the ship Glenarn, Capt. Guy, in lat. 46° 48′ S., long. 142° W., Jan. 12, 1844.

They live in large shoals; the flesh is esteemed a delicacy.—*Bennett*, ii. 237.

2. DELPHINAPTERUS BOREALIS.

Elongate, snout slightly protruding; black, with a white lanceolate spot on the breast, which is extended in a narrow line to the tail.

Delphinapterus borealis, *T. Peale, U. S. Exp. Exped.* 35 (t. 8. f. 2. ined.).
Hab. North Pacific Ocean, lat. 46° 6′, long. 134° 5′ W.—*Peale.*

13. DELPHINUS.

Forehead rounded. Nose produced, bald. Dorsal fin falcate, in the middle of the back. Skull with the hinder wings of maxilla horizontal, sometimes thickened on the edge over the orbit; nose elongate, tapering, depressed, broader than high, convex, roundish above, and slightly concave in front of the blowers, nearly parallel on the sides and rounded in front. Teeth small, conical, extending the greater part of the length of the jaw.

Delphinus, *Gray, Spic. Zool.* 1, 1828; *Zool. Erebus & Terror,* 36, 1847; *Wagler, N. S. Amph.* 35.
Delphinus, pars, *Linn.*; *Illiger,* 143, 1811.
Delphinorhynchus, pars, *Lesson.*
Grampus, sp. *Gray, Spic. Zool.* 2, 1828.
Cephalorhynchus, sp., *F. Cuvier, Cetac.*

Most maritime persons call these animals *Bottle-noses, Bottle-heads, Flounder-heads, Grampuses, Porpoises, Porpesses,* or *Porpusses,* sometimes adding Whale to the name. They generally confine the name of Dolphin (most used by landsmen) to the Scomberoid fish (*Coryphæna*), which changes colour in dying.

In the British Museum there is a fœtus, apparently belonging to the *Delphinus Delphis,* figured in the *Zoology of the Erebus and Terror,* t. 26, with its tongue in detail; it formed part of the collection of Sir Hans Sloane. It differs from the fœtus of *Lagenorhynchus acutus* in the nose being more produced (nearly ⅓ the length of the distance from the end of the nose to the eye); it has seven black rigid bristles on each side; the two front, rather the largest, are on the side of the upper part of the nose, the five hinder forming a descending line nearly parallel to the groove which separates the beak. The tongue is convex on the sides, with a rather narrow flat space on the hinder part, separated from the under sides by a sharp entire edge; the front is rather dilated, sharp-edged and obscurely crenated.

SECTION OF GENERA.

a. Head shortly beaked. Nose of skull moderate. Triangle on hinder part of beak elongate, produced before the teeth-line. Palate flat. Teeth $\frac{24}{24}-\frac{40}{40}$.

† *Beak scarcely produced. Nose of skull rather depressed, scarcely longer than the brain-cavity. Teeth* $\frac{24}{24}-\frac{30}{30}$. Species No. 1–3.

†† *Beak short. Nose of skull thick, conical, convex above, half as long as the head.*

* *Beak of skull rather thick, and rather swollen on the sides.* No. 4–7.

** *Beak of skull rather thick, conical, evenly tapering.* No. 8–9.

*** *Beak of skull slender, subcylindrical.* No. 10–11.

b. Head longly beaked. Nose of skull slender, light, rather depressed, especially in front, much longer than the head. Teeth $\frac{40}{40}-\frac{60}{60}$.

* *Skull flattened behind. Triangle to the teeth-line. Palate flat, not grooved on the side.* No. 12–15.

** *Skull roundish. Triangle just to the teeth-line. Palate with a deep groove on each side and a high central ridge behind.*

† *Beak moderate,* $1\frac{1}{2}$ *the length of the brain-cavity. Teeth* $\frac{45}{45}$ *or* $\frac{55}{55}$. No. 16–20.

†† *Beak of skull twice as long as the brain-cavity. Teeth* $\frac{55}{55}-\frac{60}{60}$. No. 21.

*** *Skull round. Triangle not reaching to the teeth-line. Palate convex, with a very concave line on the hinder part of each side. Beak twice as long as the head. Teeth* $\frac{50}{50}$. No. 22.

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a. Head shortly beaked. Nose of skull moderate. Triangle on hinder part of beak elongate, produced before the teeth-line. Palate flat. Teeth $\frac{24}{24}-\frac{40}{40}$.

† *Beak scarcely produced. Nose of skull rather depressed, scarcely longer than the brain-cavity. Teeth* $\frac{24}{24}-\frac{30}{30}$. Cephalorhynchus.

Cephalorhynchus, *F. Cuvier, Cetac.*
Grampus, pars, *Gray, Spic. Zool.* 2, 1828.

1. Delphinus Heavisidii. The Hastated Dolphin.

Black, with a streak, and two diverging white lines beneath; teeth $\frac{3}{4}\frac{3}{3}$; nose of skull nearly half the length of head; lower jaw truncated in front.

Delphinus (Grampus) Heavisidii, *Gray, Spic. Zool.* 2. t. 2. f. 6, 1828; *Schlegel, Abh.* t. 3. f. 1–4, t. 4. f. 6.
D. Capensis, *Dussumier, MSS.; Cuv. R. A.* i. 288, not *Gray*.
D. Dussumieri, *Fischer, Syn. Mam.* 656.
D. Cephalorhynchus, *F. Cuv. Cetac.* 158.
Marsouin du Cap, *F. Cuv. Mam. Lith.* 3.
D. hastatus, *F. Cuv. Cetac.* 161; *Rapp. Cet.* t. 3.
Phocæna Homei, *A. Smith, Zool. Journ.* xvi; *Bull. Sci. Nat.* xviii. 276.
D. tridens, *A. Smith.*
Delphinus Homei, *Fischer, Syn. Mam.* 656.
Grampus Heavisidii, *Gray, Cat. Mam. B. M.* 134.
D. Phocænoides, *Fischer, Syn.* 657.
Inhab. South Sea, Cape of Good Hope.

a. Stuffed skin. Cape of Good Hope. Presented by the Council of the College of Surgeons.

The specimen described and figured by Gray, Quoy, and A. Smith.

M. Quoy's description and figure, on which F. Cuvier founded *D. hastatus*, are from the specimen originally described by me, and now transferred from the College of Surgeons to the British Museum.

There is a skull, marked *D. Cephalorhynchus*, in the Paris Museum. Beak flat; palate flat, rather concave behind; teeth rather blunt, $\frac{2}{2}\frac{6}{6}$; orbits rather shelving; symphysis of the lower jaw very short, rather keeled below. Length, $11\frac{1}{4}$; beak, $4\frac{3}{4}$; width at notch, $2\frac{1}{2}$ inches.

2. Delphinus obscurus. Dusky Dolphin.

Black, with oblique diverging streaks on the side, and beneath whitish; teeth $\frac{2}{4}\frac{4}{4}$–$\frac{2}{2}\frac{6}{6}$; nose of skull about $\frac{5}{9}$ of its length and nearly $2\frac{1}{3}$ the length of its width at the notch; lower jaw truncated in front.

Delphinus (Grampus) obscurus, *Gray, Spic. Zool.* ii. t. 2. f. 2, 3; *Gray, Zool. E. & T.* 37. t. 16, skull.
Delphinus obscurus, *Fischer, Syn. Mam.* 656.
D. cruciger, *Quoy & Gaim. Voy. Uran.* t. 12. f. 3, 4, from animal in ocean; *Fischer, Syn. Mam.* 507.
D. bivittatus, *D'Orb. Voy. Amér. Mérid. Mam.* t. 21, animal and

skull; *Lesson, Bull. Sci. Nat.* vii. 373; *Zool. Coq.* 178. t. 9. f. 3; *Fischer, Syn. Mam.* 510.

? Delphinus albigena, *Quoy & Gaim.*; *Lesson, N. R. Anim.* 198.

D. superciliosus, *Schlegel, Abh.* 22. t. 1, 2. f. 3. t. 4. f. 4; *Fischer, Syn. Mam.* 510.

Phocæna superciliosa?, *Lesson, Mam.* 415.

D. Fitzroyii, *Waterhouse, Zool. Beagle*, t. 10, jun.

D. obscurus (var.), *Quoy, Voy. Astrol.* 151. t. 28.

Dauphin à museau courte, *Voy. Pole Sud*, t. 22. f. 1.

? D. superciliosus, *Lesson, Voy. Coq.* t. 9. f. 2??; *F. Cuv. Cetac.* 149?

Inhab. Southern Ocean, Cape, *Heaviside*.

a, *b*. Skulls. Cape of Good Hope?

c. Stuffed skin. Cape of Good Hope. Presented by the Council of the College of Surgeons.

The specimen described and figured in *Spicil. Zool.*

		ft.	in.
Skull:	Length, entire	15	0
	„ of nose	8	0
	„ of lower jaw	12	0
	Width at orbit	6	6
	„ at notch	3	9
	„ at middle of beak	3	0
Body:	Length, entire	5	1
	„ to dorsal fin	2	1
	Width of tail	1	2

The skull of this species is intermediate in form between the *Lagenorhynchus* and *Delphinus*.

M. Garnot's description of *D. bivittatus*, as given by F. Cuvier, is very short, but it appears to fit this species.

The skull, marked *Dauphin à museau court*, in the Paris Museum, has teeth $\frac{3}{2}\frac{0}{0}$; triangle extends much in front of the tooth-line; nasal grooves wide in front; length, $14\frac{1}{2}$; beak, 8; width at notch, $3\frac{1}{2}$ inches. It is evidently this species.

There is a skull named *D. bivittatus*, D'Orbigny, 1830, in the Paris Museum,—beak quite flat above; triangle to near the middle of the beak; length of skull, 14; of beak, 7; width at notch, 4 inches,—which appears to be only a variety of this species.

This is probably the skull of the specimen and skull figured as *D. cruciger, D'Orb. Voy. Amér. Mérid. Mam.* t. 21, which is represented as black, the underside from back of chin, and streak on upper part of the side from the eyes to the base of the tail white. Teeth ——?

3.? DELPHINUS COMPRESSICAUDA. The COMPRESSED-TAILED DOLPHIN.

Teeth $\frac{44}{46}$, small, conical, hooked; head coloured; belly whitish; pectoral short; upper jaw longest; nose short; base of the tail compressed on each side.

Phocæna compressicauda, *Lesson, Cetac.* 199; *F. Cuv. Cetac.* 186 (from *Garnot MSS.*).
Inhab. 4° S. lat., 26° E. long. of Paris.

	ft.	in.
Animal: length to pectoral.....	1	8
expanse of tail	1	7

†† *Beak short. Nose of skull thick, conical, convex above, half as long as the head.* Tursio.

Tursio, *Gray, Zool. E. & T.* 37.
Cetus, sp. *Brisson.*

* *Beak of skull rather thick, and rather swollen on the sides. Teeth* $\frac{20}{20}$–$\frac{30}{30}$.

4. DELPHINUS TURSIO. BOTTLE-NOSE DOLPHIN.

Black, whitish beneath; teeth $\frac{24}{24}$, truncated when old; skull-nose $\frac{2}{9}$ of entire length; intermaxillaries very convex, forming a strong rib on each side above; intermaxilla and vomer forming part of the palate.

Delphinus Tursio, *O. Fab. Faun. Græn.* 49; *Wright, Mag. N. H.* ii. 609, 1838; *Bonnat. Cetol.* 21. t. 11. f. 1; *Schreb. Saugth.* t. 344; *Desm. Mam.* 514; *Fischer, Syn.* 508; *Zool. E. & T.* 37. t. 10, animal.
Tursio truncatus, Bottle-nose Whale, *Gray, List Mam. B. M.* 104.
D. Orca, *Gerard, Dict. Sci. Nat.* 75.
D. Nesarnak, *Lacep. Cet.* 307; *Desm. Mam.* 515, from *O. Fab.*
Delphinus truncatus, *Montague, Wern. Trans.* iii. t. 5. f. 3, skull, cop. *Bell, B. Quad.* 472, fig.
Bottle-nose, *Hunter, Phil. Trans.* lxxxvii. t. 18, cop. *Bonnat. Cetol.* t. 11. f. 1, *and Bell, B. Quad.* 469, 1787, fig.
L'Oudre (Orca), *Bellon, Aquat.* f. 6. tab. at p. 18.
Dauphin vulgaire, *Camper, Cetac.* t. 35–40, skull.
Grand Dauphin, ou Souffleur, *Cuvier, R. A.* i. 278.
ANAT. *Cuvier, Oss. Foss.* v. 277. t. 21. f. 3, 4. t. 23. f. 23, 29. f. 22. f. 18; *Camper, Cetac.* t. 35–40; *Mont. Wern. Trans.* iii. t. 5.
Var.? D. Tursio, *Schlegel, Abh.* t. 5. f. 1, 2. t. 4. f. 9.
Inhab. North Sea.

a. Skull and teeth.

b. Skull, bad state. From Dr. Mantell's Collection.

In the *Zoology of the Erebus and Terror*, tab. 10, is a copy of a most accurate drawing, by Mr. R. Templeton, of a specimen caught on the south of Ireland, in November 1828. The following are its measurements:—

	ft.	in.	lin.
Length, entire	7	6	0
„ eyes	1	0	0
„ ear	1	2	5
„ pectoral	1	6	9
„ end of the pectoral	2	6	7
„ front of the dorsal	3	2	5
„ end of the dorsal	4	2	5
„ genital organ	5	3	0
„ to the vent	5	6	3
„ to base of tail	7	0	0
„ to end of middle of tail	7	6	0
„ to end of tail-fin	8	1	3

There is some difficulty about the colour of this species, which may arise from two being confounded under one name. Bonnaterre, Montague and Wright describe it as black above and whitish beneath; O. Fabricius as all blackish, the belly a little whiter and the young paler; Schlegel figures it of a uniform deep black colour.

The following are the measurements of five skulls, the first being Montague's specimen in the British Museum, and four in the College of Surgeons; the fourth is No. 1126, and the fifth No. 1125 of the College Catalogue:—

	in.	in.	in.	in.	in.
Length, entire	21½	21	21	21	22
„ of nose	11½	12	12	11½	12
„ of teeth-line	...	9¾	10	10	10¼
„ of lower jaw	...	18½	18½	...	18
Width at notch	5¾	5	5½	5¾	5¾
„ at orbit	10¼	...	10½	10½	9¼
„ at middle of beak	...	3½	4½		

In the skull of Montague's specimen, in the British Museum, the 4th and 10th teeth from the front on each side appear by the hole to have been larger than the rest. We have a second imperfect skull of the same measurement.

The skull of the skeleton presented by Mr. Howship, in Mus. Coll. Surg. (n. 1125), taken below the Nore, in June 1828, has the teeth $\frac{2}{2}\frac{3}{3}$, the two hinder upper without any opposite them; the 4th, 5th and 6th upper are largest, the middle lower are truncated;

the lower jaw obliquely truncated, with a rather prominent gonyx. The elongated intermaxilla and the vomer are visible in the palate. In the old skulls the intermaxillaries are $\frac{1}{9}$ width above, and the sides of the maxillaries are shelving. In skull n. 1126 (Mus. Coll. Surg.) the teeth are very oblique and truncated at the end.

In all the skulls I have seen of this species the teeth are more or less worn down, but Mr. Bell says he has two skulls in which they are acute.—*Brit. Quad.* 472. M. F. Cuvier (*Cetac.* 223) complains of Montague's figure of the skull of *D. truncatus*: he does not recognize in it the *D. Tursio*, but thinks it most resembles *D. Delphis!* Hence the origin of his complaint.

A stuffed specimen and skeleton, in the Edinburgh University Museum, from the Firth of Forth, have all the teeth truncated and flat. A skeleton in the Surgeons' Hall of Edinburgh, from the same locality, has them all acute. The latter is named *D. Delphis*. The atlas (or first) and second cervical vertebræ united by the body and lateral process; the third to the seventh cervical vertebræ free.

A specimen with teeth $\frac{3}{3}\frac{4}{4}$, large, conical, acute, was taken in the river Orwell, May 10, 1849.

5. Delphinus Abusalam. The Abusalam.

Black, below white, with small dark spots; teeth $\frac{2}{2}\frac{5}{5}$–$\frac{3}{3}\frac{8}{8}$. Nose of skull about $\frac{5}{9}$ of length, $2\frac{1}{2}$ its width at the notch. Intermaxillary bones very convex, forming a strong ridge on each side. Lower jaw tapering in front.

Delphinus abusalam, *Rüpp. Mus. Senk.* 1842, t. 12. f. 1, 2, 3; *Gray, Zool. Erebus & Terror*, 38.
Inhab. Red Sea.

Only known from Dr. Rüppell's description and figure. It has been said to be the same as *D. Tursio*, but it appears to be different.

Delphinus aduncus, *Hemp. & Ehrenb. Sym. Phys.* ii. Beak depressed, elongate; teeth $\frac{2}{2}\frac{5}{5}$, conical, strong. Inhab. Island of Belhosse,—is perhaps the same as the former.

6. Delphinus Eutropia. The Eutropia.

Nose of skull rather longer than the length of the brain-cavity, rather dilated on the sides before the notch, very convex and rounded above. Triangle elongate, produced before the teeth-line, concave on the sides and strongly keeled in the centre behind; hinder edge of blow-hole rather prominent. Intermaxillaries wide, convex above, leaving a rather broad open space in front. Lower jaw thick, blunt, and rather produced beyond the

upper in front. Skull rather compressed behind. Palate rather concave in front, convex in the centre behind, and the palate keeled on each side. Teeth $\frac{34}{34}$, rather slender, cylindrical, conical at the top. The frontal ridge half the distance between the notch on the convexity of the condyles. Condyles large, rather oblique; foramen magnum rather wider than high.

Delphinus Eutropia, *Gray, Proc. Zool. Soc.* 1849, 1; *Zool. Erebus & Terror*, t. 34, ined. Skull.

a. Skull. Pacific Ocean. Chili. From Dr. Dickie's Collection.

	in.	lin.
Skull: Length, entire	15	0
„ from notch	6	10
„ beak	7	10
„ teeth-line	6	10
„ lower jaw	11	11
Width at notch	3	6
„ at orbit	6	5
„ at middle of beak	2	10
„ middle intermaxillaries	1	3
„ of condyle above	3	3
Height of each condyle	1	3

7. Delphinus Eurynome. The Eurynome.

Skull roundish; nose thick, broad, rounded above; intermaxillaries rather convex, $\frac{1}{5}$ as wide as maxillaries; nose $\frac{1}{3}$ longer than the length of the head (or $4\frac{1}{7}$ of entire length), twice and $\frac{1}{3}$ the length of the width at the notch; back of blower largely tubercular; teeth $\frac{22}{22}$, moderate, cylindrical, rather curved, acute.

D. Eurynome, *Gray, Cat. Ost. B. M.* 143; *Zool. E. & T.* 38. t. 17, skull.

Inhab. North Sea?

a. Skull. Figured *Voy. E. & T.* t. 17.

	in.	lin.
Skull: Length, entire	22	0
„ of head	9	1
„ of nose	12	3
„ of teeth-line	10	0
„ of lower jaw	18	0
Width at temples	11	0
„ at notch	5	4
„ at middle of beak	3	6

The skull of this species is most like *D. Tursio*, but the nose is $\frac{1}{4}$th longer than the length of the head, slenderer and more rounded, and the teeth smaller.

*** Beak of skull rather thick, conical, evenly tapering.*

8. Delphinus Metis. The Metis.

Skull globular; back of blower tubercular; nose thick, rather conical, regularly tapering, upper part convex, rather longer than the head and rather more than twice as long as the width at the notch; intermaxillaries convex, rather more than half the width at the beak; teeth $\frac{2}{2}\frac{2}{2}$, rather conical, acute, curved.

D. Metis, *Gray, Cat. Ost. B. M.* 36; *Zool. Ereb. & Terror*, 38. t. 18, skull.
Inhab. ——?

a. Skull.
The specimen figured in the *Voyage of the Erebus and Terror.*

		in.	lin.
Skull:	Length, entire.....	21	0
	,, of nose	11	9
	,, of lower jaw ..	17	0
	Breadth of orbit.....	9	6
	,, notch.....	5	0
	,, middle of beak	3	0

This skull is like *D. Euphrosyne*, but differs in the nose being rather shorter compared with the length of the head, more tapering, and the teeth rather larger. It differs from *D. Tursio* in the nose being much shorter and more conical and acute.

9. Delphinus Cymodoce. The Cymodoce.

Skull roundish; nose broad, rounded above, broad at the base, gradually tapering in front and rather convex on the sides, $\frac{1}{12}$ longer than the head, or rather more than half the entire length and rather more than twice as long as the width at the notch; the triangular impression in front of the blower rather elongate, extended rather beyond the line of the hinder teeth; teeth $\frac{2}{2}\frac{2}{1}$, moderate, conical, slightly incurved, acute (rather more than three in one inch); lower jaw regularly converging, straight on the sides, the front obliquely truncated, and the gonyx slightly produced.

Delphinus Cymodoce, *Gray, Cat. Ost. B. M.* 35; *Zool. Ereb. & Terror*, 38. t. 19.
Hab. ——?

a. Skull ——?
The specimen figured in the *Voyage of the Erebus and Terror*, t. 19.

		in.	lin.
Skull:	Length, entire.....	18	6
	„ of head	8	6
	„ of nose	10	0
	„ of teeth-line ..	7	9
	„ of lower jaw ..	15	0
	Width of temple.....	8	6
	„ of notch	4	9
	„ at middle of nose	2	8
	„ of intermaxillary	1	7

This skull is very like *D. Metis*, but much smaller, and the beak more conical.

*** *Beak of skull slender, subcylindrical. Teeth* $\frac{3}{3}\frac{6}{6}$–$\frac{4}{4}\frac{5}{5}$.

10. Delphinus Doris. The Doris.

Skull roundish; nose depressed, $\frac{1}{7}$ of the entire length, and $2\frac{1}{3}$ times the length of the width at the notch, concave behind, rounded on the sides, convex in the middle of the central ridge, flattened in front; intermaxillaries convex, especially in the middle of their length, with a groove between them in front; an irregular impression in front of the blower, rather elongate, extending a little before the line of the hinder teeth; teeth $\frac{3}{4}\frac{5}{5}$ or $\frac{3}{3}\frac{6}{6}$, slender, conical, incurved, acute; lower jaw slender, very obliquely truncated; palate rather convex in front, tapering, shortly grooved behind.

D. Doris, *Gray, Cat. Ost. B. M.* 36; *Zool. Erebus and Terror*, 39. t. 20, skull.
Hab. —— ?

a. Skull ——?
The specimen figured in the *Voyage of the Erebus and Terror*, t. 20.

		in.	lin.
Skull:	Length, entire	17	4
	„ of head.....	7	3
	„ of nose	10	1
	„ of teeth-line.....	9	2
	„ of lower jaw.....		
	Width at temples	7	9
	„ at nostrils	4	4
	„ at middle of beak	2	4
	„ at intermaxillaries	1	1

b. Skull. From Haslar Hospital.
c. Skull.

This species, in the slenderness and length of the beak and number of teeth, forms the passage between this and the next section.

In the Ipswich Museum there is a skull of a species allied to this, if not the same. The beak is $2\frac{1}{2}$ times as long as wide at notch; intermaxillaries convex, solid, with an elongated lanceolate space in front; triangle elongated, about $\frac{1}{3}$ before the end of the tooth-line, rugulose; lower jaw slender in front, slightly truncated; back of the head convex, rounded; palate flat, rather concave in the middle of the front part; teeth $\frac{3}{3}\frac{3}{3}$.

	in.	lin.
Length, entire	16	0
„ of lower jaw ..	13	3
„ of beak	9	3
Width at notch	3	6
„ at orbits	7	9

11. Delphinus frenatus. The Bridled Dolphin.

Blackish, paler on the sides, the belly white, end of tail black beneath; head black; sides ashy, with a dark band from the angle of the mouth under the eye.

Delphinus frenatus, *F. Cuv. Mam. Lith.* t. ; *Cetac.* t. 1, 158, from *Dussumier's description and drawing.*
Inhab. Cape de Verd.

Skull in the Paris Museum, from Cape de Verd, sent by Dussumier. Length 18·0 inches, of beak 8·3, width at notch 3·5, of middle of beak 1·11; teeth $\frac{3}{3}\frac{3}{4}$, rather larger than *D. dubius*; palate smooth; intermaxillaries large, expanded; nasal convex beneath; triangle rather extended in front of the teeth-line, rugose, and rather more so than *D. dubius*. There is a second skull marked *D. frenatus*, No. 2: width at notch, 3·7; teeth $\frac{3}{3}\frac{3}{4}$ or $\frac{3}{3}\frac{3}{5}$; palate flat; nasal very convex, especially behind; triangle extending rather in front of the teeth-line, very rugose; jaws rather strongly reflexed in front of the notch.

b. Head longly beaked. Nose of skull slender, light, rather depressed, especially in front, much longer than the head. Teeth $\frac{4}{4}\frac{0}{0}$–$\frac{6}{6}\frac{0}{0}$. Delphinus.

* *Skull flattened behind; triangle to the teeth-line; palate flat, not grooved on the side.*

12. Delphinus Clymene.

Skull rather depressed, the hinder part slightly convex; nose rather depressed, shelving on the sides; intermaxillaries convex,

with an elongated groove between them in front, $\frac{3}{5}$ the entire length, twice and a half the length of the width at the notch; the triangular impression in front of the blower rather elongate, produced a little beyond the line of the hinder tooth, rugose in front, with oblique grooves on each side; teeth $\frac{40}{40}$, small, slightly incurved, acute, six in an inch.

Delphinus Clymene, *Gray, Cat. Osteol. Spec. B. M.* 35.
D. Metis (no. 2), *Gray, Zool. Erebus and Terror*, 39 (not no. 1 nor figure).
Inhab. ——?

		in.	lin.
Skull:	Length, entire	15	7
	„ of head	6	3
	„ of nose	9	4
	„ of tooth-line	7	4
	Width of temple	6	10
	„ at nostril	3	7
	„ at middle of back	2	2
	„ of intermaxillaries	1	0

This species is like the *D. Doris* in size, but the skull behind the frontal ridge is much flatter, and gradually shelving to the *foramen magnum*, and the beak is more depressed.

Var. In the museum of the Bristol Institution there is an imperfect skull, apparently of this species, which differs in the nose being about $\frac{3}{4}$ of an inch shorter, and rather narrower. It has 36 teeth in the upper jaw.

		in.	lin.
Skull:	Length of nose	8	7
	Width at notch	3	8
	„ at middle of nose	2	0

A lower jaw is fitted to it, which has no teeth and a short gonyx, but it is doubtful if it belong to the same animal; its length is $12\frac{1}{4}$, symphysis $1\frac{1}{2}$ inch.

A second skull in the same collection is very similar, and has $\frac{38}{38}$ teeth.

		in.	lin.
Skull:	Length, entire	15	0
	„ of nose	9	0
	Width at notch	3	4
	„ at middle of nose	1	10

This skull only differs from the former in the lower jaw being slenderer and united by a longer symphysis in front. Lower jaw $12\frac{1}{2}$ inches long; symphysis 2 inches.

These are probably indications of two other species. The hinder

part of the skull of the latter is also rather more convex than the same part in *D. Pherusa*.

In the description of this species in the *Zoology of the Erebus and Terror*, *D. Metis* is mentioned in three places instead of *D. Doris*.

13. Delphinus Styx. The Styx.

Skull roundish, rather flattened behind; nose rather depressed, rather convex in the middle, shelving on each side, rather longer than the head, $\frac{6}{9}$ the entire length, nearly twice and a half as long as the width at the notch; the triangular impression just to the line of the hindermost teeth; teeth $\frac{42}{42}$, slender, subcylindrical, acute, about five in an inch; palate nearly flat; lower jaw rather produced and rounded in front.

D. Styx, *Gray, Zool. E. & T.* 40. t. 21, skull.
Inhab. W. Africa, *Capt. W. T. W. Owen, R.N.*

Skull in Mus. United Service Institution.

	in.	lin.
Length, entire	18	0
,, of nose	10	3
,, of lower jaw...	14	9
Width at the notch ...	4	6
,, at the orbit	8	6
Teeth	$\frac{42}{42}$	

This species is very like *D. Euphrosyne*, but is rather smaller and the beak rather shorter: it may prove only a variety.

14. Delphinus Euphrosyne. The Euphrosyne.

Skull round, rather flattened behind; nose rather broad and rather tapering in front, depressed, flat at the base, shelving on the sides and rounded in the middle above, about half as long again as the head, or $\frac{3}{5}$ the entire length, and $2\frac{1}{2}$ times the length of the width at the notch; teeth $\frac{45}{42}$, slender, elongate, slightly curved, acute. The intermaxillaries are convex and rounded above, with a wide groove between them for half their length in front.

Delphinus Euphrosyne, *Gray, Cat. Ost. Spec. B. M.* 147; *Zool. Ereb. & Terror*, 40. t. 22, skull; *Nilsson, Skand. Fauna*, i. 595.
D. Styx, pars, *Gray, Cat. Osteol. Spec. B. M.* 38.
D. Holböllii, *Eschricht, Naturf. möt i Köpenh.* 1847, fide *Nilsson.*
Inhab. North Sea.

		in.	lin.
Skull, Mus. Norwich:	Length, entire	18	6
	,, of head	7	4
	,, of nose	11	3

	in.	lin.
Length of lower jaw.....	16	0
„ of temple	9	6
Width of notch	4	6
„ at middle of beak ..	2	4
„ at temples	8	3

a. Skull imperfect behind. Specimen figured *Zool. Erebus & Terror*, t. ined.

This skull only differs from the one at Norwich in being rather smaller in all its dimensions.

	in.	lin.
Length, entire.....	17	6
„ of nose	10	3
„ of lower jaw ..	14	3
Width at notch	4	3
„ at orbit	7	6
Teeth.....	$\frac{44}{41}$–$\frac{44}{41}$	

This and the former species are very like *D. Clymene*, but are rather broader and rather more depressed; the intermaxillaries are rather more convex, especially behind, and form a regular defined front edge to the triangle, which is rough in front, and marked with oblique cross grooves; while in *D. Clymene* the triangle is furnished with an acute, raised margin on each side in front.

A skull in Mus. Coll. Surgeons (*Delphinus Delphis, Cat. Mus. Coll. Surg.* 161, n. 1117), with the palate convex, not grooved on the side; intermaxillary and vomer forming part of the palate; teeth $\frac{42}{39}$. Obtained from the Leverian Museum in 1806. May be another variety.

	in.	lin.
Skull: Length, entire	16	0
„ of nose.....	10	0
„ of lower jaw ...	13	3
Width at notch	3	6

Prof. Nilsson thinks that *D. Doris* (*Gray*), *D. pseudodelphis* (*Schlegel, Abhand.* i. 22) and *D. dubius* (*Cuvier, Mus. Paris*) all probably belong to this species.—*Skand. Fauna*, i. 598.

15. Delphinus Alope. The Alope.

Skull moderate; beak elongate, depressed, $1\frac{3}{4}$ time the length of the brain-cavity, rather more than three times the width at the notch; intermaxillaries convex, rounded, with a very narrow cavity between them; maxillaries spongy, shelving; triangle elongate, reaching just beyond the tooth-line, rugose. Teeth

very slender, $\frac{4}{4}\frac{8}{6}$; palate rather convex; lower jaw slender; gonyx keeled, short.

Delphinus Alope, *Gray, Zool. Erebus & Terror*, t. ined.
Hab. ——?

a. Skull. ——? Mr. Warwick's Collection.
Skull: length, entire, $16\frac{3}{4}$; of nose, $10\frac{3}{4}$; skull, 6; width at orbit, 6; at notch, $3\frac{1}{2}$; at middle of beak, 2 inches.

Doubtful species perhaps of this section.

1. DELPHINUS? MICROBRACHIUM.

Dauphin à petit pectoral, *Voy. Pole Sud*, t. 21. f. 2; t. 23. f. 7, 8, not described.
Hab. South Sea?

The skull so named in the Paris Museum has the palate flat, rather convex behind; triangle extended rather in front of the teeth-line. Teeth $\frac{3}{3}\frac{6}{6}$; nose narrowed in front, $\frac{3}{5}$ the length and $2\frac{3}{4}$ times the length of the breadth at the notch; lower jaw slender in front; nasal rather high and convex. May be a *Steno*.

2. DELPHINUS DUBIUS.

Nose depressed, like *D. Delphis*, but rather shorter; the teeth small and sharp, $\frac{3}{3}\frac{6}{7}$, thin, pointed.

D. dubius, *Cuv. R. A.* i. 288; *F. Cuv. Mam. Lith.* t. ; *Cetac.* 154; *Ann. Mus.* xix. 14.
Inhab. Coast of France.

I found three skulls under this name in the Paris Museum.

1. "D. dubius, *Cuv.* n. 10." *Mus. Paris.*

Skull: length 15·3, of beak 10·0, width at notch 2·9, at middle of beak 1·7; teeth $\frac{4}{4}\frac{8}{7}$ or $\frac{4}{4}\frac{6}{7}$; palate flat, rather convex; lower jaw flat, obliquely in front and keeled in front beneath.

2. "D. dubius, *Cuv.* n. 2." *Mus. Paris.*

Skull: length 16·6, of beak 10·0, of teeth-line 8·6, width at notch 3·8, at middle of beak $1·7\frac{1}{2}$; teeth $\frac{3}{4}\frac{7}{6}$ or $\frac{3}{?}\frac{8}{}$, small, hooked; palate flat, rather convex; beak tapering in front, reflexed before the notch; intermaxillaries rather convex; triangle extending rather in front of the teeth-line, rugose in front.

3. "D. dubius, *Cuv.* n. 7." *Mus. Paris.*

Skull, from the Cape de Verd: length 16·0, of beak 9·4, of teeth-line 7·6, width at notch $3·7\frac{1}{2}$, at middle of beak 1·4; teeth

$\frac{37}{37}$–$\frac{37}{36}$; triangle scarcely extended in front of the teeth-line; palate flat; lower jaw oblique, compressed and flat on the sides, rather turned up at the tip; intermaxillaries convex behind, nose tapering in front.

This last is perhaps *D. frontalis* (*Dussum. Cuv. R. A.* i. 288).

"Black, belly white, with a lead-coloured band from angle of mouth to pectoral.

"Inhab. Cape Verd."

3. DELPHINUS LORIGER.

Lead-coloured; middle of sides, chest and belly white; lead-coloured, rather flexuous line from orbit to the lumbar region.

Delphinus loriger, *Schreb. Saugth.* t. 362?
Delphinus loriger, *Wiegmann*; *Reichb. Naturg. Cetac.* 12, 41. t. 16. f. 51.
Inhab. ——?

** *Skull roundish; triangle just to the teeth-line; palate with a deep groove on each side, and a high, central ridge behind.*

† *Beak moderate,* $1\frac{1}{2}$ *the length of the brain-cavity. Teeth* $\frac{45}{45}$–$\frac{50}{50}$.

16. DELPHINUS DELPHIS. The DOLPHIN.

Black, sides grey, beneath white; the dorsal moderate; teeth $\frac{42}{42}$ ($\frac{50}{53}$, *Schlegel*); nose of skull half as long again as the length of the brain-cavity.

D. vulgaris, *Lacep. Cet.* 250. t. 14, skull.
D. antiquorum, *Ray*, *Will. Pisc.* 28. t. A 1. f. 1.
Delphinus Delphis, *Linn. S. N.* i. 108; *Bonnat. Cet.* 20. t. 10. f. 2; *Schreb. Saugth.* t. 343; *Desm. Mam.* 514; *F. Cuv. Cet.* 123; *Mam. Lith.* t. ; *Jardine's Whales*, t. 23, cop. *Bell's Brit. Quad.* 463. fig.; *Cuvier*, *Mam. Lithog.* t. ; *Schlegel*, *Abh.* i. 20. t. 4. f. 2, teeth; *Cuvier*, *Oss. Foss.* v. 275. t. 21. f. 9, 10; *Gray*, *Zool. E. & T.* 40. t. 26, tongue and fœtus.
D. Delphinus, *Pliny*, *H. N.* ix. c. 7, 8; *Bellon*, *Aquat.* 7. fig.; *Rondel. Pisc.* 459. fig.; *Aldrov. Pisc.* 704. fig.; *Willoughb. Pisc.* 28. t. A 1. f. 1; *Klein*, *Miss. Pisc.* ii. 24. t. 3. f. *a*.
Dolphin, *Shaw*, *Zool.* ii. 507. t. 229.
Dauphin ordinaire, *Cuv. R. A.* i. 278.
ANAT. *Cuvier*, *Oss. Foss.* v. t. 21. f. 9, 10; *Lacep.* t. 14.
Inhab. North Sea. Atlantic Ocean.

a, *b*, *c*. Stuffed specimens. English coast. Presented by Messrs. J. and C. Grove.

? *a*. Skull, large.

b. Skull, smaller. Australia. Presented by A. Cunningham, Esq.
c. Skull. St. Helena. Presented by A. Pearson, Esq.
d. Skull. Presented by J. J. Bennett, Esq., F.R.S.
e. to *p*. Twelve skulls.
q. Skeleton. English coast.

Measurement of different skulls in the British Museum. The particular localities are unknown.

Delphinus Delphis.	Length, entire.		Length of nose.		Breadth at notch.		Breadth at the commencement of teeth.		Length of nose as compared to width at notch.	Number of teeth.
	in.	lin.	in.	lin.	in.	lin.	in.	lin.	in.	
a ...	19	0	12	0	3	10	2	9	$3\frac{1}{4}$	45
b ...	18	0	11	4	3	10	2	9	3	43
c....	18	3	11	3	3	8	2	3	$3\frac{1}{4}$	45
d ...	17	0	10	0	3	4	2	2	3	46
e....	17	0	10	6	3	6	....		....	46
f....	.....		.....		....		....		....	..
g....	17	0	11	0	3	5	2	2	3	45
h ...	17	0	10	6	3	9	2	9	$2\frac{3}{4}$	46
i....	18	0	11	6	3	8	2	2	3	50
k....	17	6	10	6	3	6	2	2	3	48
l....	16	6	10	3	3	6	2	2	$2\frac{3}{4}$	46
m...	17	6	11	6	3	7	2	2	3	48
n ...	18	0	11	0	3	$7\frac{1}{2}$	2	9	3	43

The most prominent difference between the specimens is in the width of the upper jaw in front of the notch, just over the commencement of the teeth-series; but there does not occur any other character in connexion with it. There is also a slight difference in the form of the palate; in *a*, the central ridge is narrow and rounded above behind; in *b*, it is broad, flat, sharp-edged, and very deeply concave on the sides, under the edges, but the different specimens vary in this particular. In *d* and *g*, the hinder part of the palate, near the entrance of the inner nostrils, is sharply keeled; and in *a* the two ridges are rounded.

I am by no means certain that with a larger series of skulls in a perfect condition, and with the animals they belonged to, it might not prove that there are more than one species amongst these skulls.

In all these skulls the intermaxillaries are seen below, forming

a slender, elongated, triangular space in the front of the palate, and in some the vomer is also more or less seen in the middle of the palate; but the absence and presence of this bone in the palate, which Mr. Owen appears to regard as important in the distinction of species (see 'British Fossils,' p. 518), is of very little consequence, at least in this kind.

Cuvier (*Oss. Foss.* v. 303) described the cervical vertebræ as fused into a single piece, yet in *Anat. Comp.* i. 105, he states that in the *Dolphins* the atlas and axis only are united, the other cervical vertebræ remaining separate, though extremely thin. Lesson (*Cet.* p. 226) describes the six first as quite thin in the *D. Delphis*, and the last as somewhat thick. Dr. Jackson, who points out these discrepancies, described the dolphin he examined as having the first and second cervical scarcely moveable upon each other, and the other five smaller and rather more moveable. —*Jackson, Bost. Journ. N. H.* v. 155.

The vertebræ are thus enumerated :—

1. *Cuvier, Anat. Comp.* i. 103	14	dorsal,	52	posterior.
2. „ *Oss. Foss.* v. 303.....	13	„	47	„
3. *Lesson, Cet.* 226	13	„	52	„
4. *Jardine, Cetacea*	12	„	52	„
5.? *Jackson, Bost. Journ. N. H.* v. 154...	14	„	55	„

Dr. Jackson gives the following description of an American specimen :—

Dusky black on the back, white on the belly, and lead-coloured on the sides; a dusky line from 1 to 2 inches in width commenced a little above the eye and passing along the sides was lost in the lead-colour within 18 or 20 inches of the tail, and another much less distinct ran parallel to this. Length 7¼ feet. Forehead convex, divided from the snout by a furrow. Fœtus 38 inches; back dark bluish grey; belly nearly salmon-colour; no longitudinal stripes as in the mother, but some very indistinct broad transverse stripes were seen towards the back; teeth had not yet appeared; cervical vertebræ 7, dorsal 14, posterior to these 55; the first and second cervical large and scarcely moveable upon each other, the other five were much smaller and rather more moveable.

Dolphin, *Jackson, Bost. Journ. N. H.* v. 153, 1845.
Inhab. Atlantic Ocean, N. America.

Whales differing in no appreciable respect from the common dolphin of the British coast came round us in the high seas of every region of the globe during the voyage. It is widely open to question whether the dolphins of so many distinct climates are not also distinct species, but as long as we are to be guided by

general resemblance and are deficient in opportunities of comparing individuals, we must be content to regard them as identical. The contents of the stomach were fish, cuttle-fish, or shrimps. The food contained in the first compartment of the stomach had seldom undergone any change, in the second its digestion had advanced, while in the third and fourth cavities it was reduced to a well-assimilated pulp.—*Bennett, Whaling Voyage*, 238.

17. Delphinus Janira. The Janira.

Skull roundish; nose depressed, half as long again as the head; triangle rather in front of the tooth-line; intermaxillaries very convex behind, with a wide groove between, above in front; palate with very wide, deep grooves on each side, extending $\frac{2}{3}$ of the length, centre ridge flattened in the middle, the intermaxillaries forming a long triangle in front; teeth $\frac{42}{42}$.

Delphinapterus Peronii, *Mus. Bristol Institution.*
Delphinus Janira, *Gray, Zool. E. & T.* 41. t. 23, skull.
Inhab. Newfoundland. Skull, presented to the Bristol Institution by G. Thorne, Esq.

		in.	lin.
Skull:	Length, entire	17	10
	„ head	6	1
	„ nose	11	9
	„ lower jaw	12	6
	Width at orbit	7	8
	„ notch	4	3
	„ middle of beak ..	2	5

This skull differs from the *D. Delphis* of the Atlantic in the beak being much shorter and narrower.

18. Delphinus Novæ Zealandiæ. The New Zealand Dolphin.

Teeth $\frac{43}{43}$; body elongated, rounded in front; nose cylindrical, rather flattened above; black-brown, edge of the upper jaw and beneath dull white, a yellow band from the eye along the side to below the dorsal; tail slate colour; pectoral and dorsal dull white, the latter dark-edged.

Delphinus Novæ Zealandiæ, *Quoy et Gaim. Voy. Astrol.* 49. t. 28; *Gray, Zool. E. & T.* 41.
Inhab. New Zealand and Cape Gable.

		ft.	in.
Length, entire		5	10
„	to blowers	1	1
„	to eye	1	0
„	to dorsal.....	2	8½
„	to pectoral	1	5

	ft.	in.
Width of caudal	1	2¼
,, of pectoral.....	4	6
Height of dorsal	0	8½
Circumference	2	11

The following is probably the same :—

Dauphin à band fauve, *Voy. Pole Sud*, t. 21. f. 1. t. 23. f. 1, 2, not described.

Skull in figure rather suddenly contracted behind; nose $\frac{7}{11}$ of the entire length of skull, and 2¾ times the breadth at the notch; intermaxillaries convex; teeth $\frac{44}{44}$. Skull so named in Mus. Paris, has a deep groove on each side the palate, and the triangle to the teeth-line.

Inhab. Van Diemen's Land.

a. Skull from Antarctic Expedition. Length 14 inches; of nose, 8; lower jaw, 12; width in middle of beak 1 inch 9 lines. Is very like figure of skull of *D. Janira*.

b. Skeleton. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

19. Delphinus Forsteri. Forster's Dolphin.

Greenish brown or rust-coloured, beneath white; a small white spot on the disk of the dorsal and pectoral fin; teeth $\frac{44}{44} = 176$, acute, erect, conical, incurved. Skull ——?

Delphinus Delphis, *Forster, Descrip. Anim.* 280; *Icon. ined. Brit. Mus.* t. 31.

D. Forsteri, *Gray, Zool. Ereb. & Terror*, 42. t. 24, for *Forster*.

Inhab. Pacific Ocean, between New Caledonia and Norfolk Island, *Forster*, 1774.

"Body straight, round, thickest behind; the pectoral fin tapering at both ends; head rounded, shelving in front, beaked; beak straight, pointed, cylindrical, depressed, attenuated and blunt at the tip; upper jaw shorter, both blunt, toothed; eyes small, lateral, oblong, nearly in the middle of the side, near the gape of the mouth, a small hole (the ears) above and behind the eyes; blower single, between the eyes in crown, lunate; a linear abdominal slit a little behind and beneath the dorsal fin, the front part the vulva, the hinder the vent; teats 2, one on each side the vulva, with a nipple the size of a pea; tail compressed on the sides, keeled above and below, and attenuated towards the tip; pectoral fin lanceolate, scarcely as long as the beak; dorsal fin in the middle of the back, nearly 3-sided, falcate behind, as long as the beak; tail horizontal, 2-lobed, each lobe oblong, lateral, subfalcate.

"Gregarious, swimming very rapidly around the ships and boats.

"Length 6 feet from nose to tail."—*Forster*.

This species resembles, in the distribution of its colouring, the *Dauphin à band fauve* (*Voy. Pole Sud*), but the band on the side is whitish, not fulvous.

20. DELPHINUS SAO. The SAO.

Skull: beak elongate, shelving on the sides, with central cartilage near half its length in front; triangle to the teeth-line; teeth $\frac{28}{28}$–$\frac{32}{32}$, small, cylindrical, hooked; palate flat in front, with a broad groove extending nearly half its length behind; intermaxillaries and palatine distinct, former broad in front; lower jaw slender, shelving, and flat-sided in front. Length 17·0, teeth-line 8·9, beak 10·6, width at notch 3·7.

Inhab. Madagascar, *Dussumier*, 1838. Skull, Mus. Paris.

†† *Beak of skull twice as long as the brain-cavity. Teeth* $\frac{55}{55}$–$\frac{60}{60}$.

21. DELPHINUS LONGIROSTRIS. The CAPE DOLPHIN.

Black; dorsal fin large, high; teeth $\frac{55}{55}$–$\frac{60}{60}$; nose $\frac{3}{5}$ of entire length; skull nearly $3\frac{1}{2}$ times the length of its breadth at the notch.

Delphinus longirostris, *Gray, Spic. Zool.* t. ; *Cuv. R. A.* i. 288, from *Dussumier, MSS. Schlegel, Abh.* t. 1, 2 & 4. f. 1, from *skull of Brooks, Faun. Japon.* t. 24; *Gray, List Mam. B. M.* 105; *Zool. Erebus & Terror*, 42.

D. Capensis, *Gray, Spic. Zool.* ii. t. 2. f. 1, not *Cuv.* nor *Rapp.*

Inhab. Southern Ocean. Cape of Good Hope, *Gray*. Japan and Ceylon, *Schlegel*. Malabar, *Dussumier*.

a. Stuffed specimen. Cape of Good Hope. Presented by the Trustees of the College of Surgeons. The specimen figured and described in *Spic. Zool.* and *Zool. E. & T.*

	in.
Length, entire	81
,, of beak	7
,, to angle of mouth	13
,, to blowers	$7\frac{1}{2}$
,, to dorsal fin	38
,, to pectoral fin	21
,, of dorsal	12
,, of pectoral	13
Breadth of pectoral	5
,, of tail	26
Circumference	42

The figure in the *Fauna Japonica* is from a drawing by a Japanese artist, made under Mr. Burger's direction.

Skull named *D. longirostris*, in the Paris Museum (n. 4), from Malabar, brought by M. Dussumier, 1827, has the palate with a deep groove on each side of a central ridge in the hinder half, slightly keeled behind near blower; beak very long, very tapering; nasal very convex, rounded; teeth $\frac{5}{4}\frac{5}{4}$, small, slightly curved; triangle exactly to the teeth-line.

	in.	lin.
Skull: length.....	2	0
„ of beak	13	9
width at notch	3	2
„ of middle of beak ..	1	7

**** Skull round; triangle not reaching to the teeth-line; palate convex, with a very concave line on the hinder part of each side; beak twice as long as head. Teeth $\frac{5}{5}\frac{5}{5}$.*

22. DELPHINUS MICROPS. The SMALL-HEADED DOLPHIN.

Skull small, subglobular; palate convex; nose very long, slender, twice as long as the length of the brain-cavity, nearly four times as long as broad at the notch; intermaxillaries convex above, with a broad cavity between them in front, rather contracted in front of the blowers; teeth $\frac{4}{4}\frac{8}{9}$; maxillaries very spongy; the triangle in front of the blowers short, not nearly reaching to the line of the hinder tooth; palate with a prominent ridge extending along its hinder two-thirds.

Delphinus microps, *Gray, Zool. E. & T.* 42. t. 25, skull.
Inhab. Coast of Brazils, *Dr. Dickie.*

a. Skull ——? From the Haslar Hospital.

The specimen figured in the *Voyage of the Erebus and Terror*, tab. 25. p. 42.

Dimensions of five skulls in inches and lines: the 1st is in the Norwich Museum, the 2nd in the British Museum, 3rd, Museum of the College of Surgeons, the 4th, Dr. Dickie's Collection, 5th, in the Edinburgh College, n. 164.

	1. in.	2. in.	3. in.	4. in.	5. in.
Length, entire	17·6	15·6	15·0	18·0	$16\frac{1}{2}$
„ of nose	...	...	9·6	11·0	$10\frac{1}{2}$
„ of teeth-line ...	...	...	8·0	8·6	
„ of lower-jaw...	14·9	13·0	12·6		
Width at notch	...	2·7	2·6	4·0	3
„ at orbits	...	...	5·3	6·0	
„ of middle of beak	2·3	2·7	1·9	2·3	
„ of intermaxillaries	8·0	9·0	...	2·0	

Var. 1. Skull in Mus. Coll. Surg. Edin. n. 164. Barclay Collection. Head smaller, and the nose rather shorter, only $1\frac{3}{4}$ the length of the brain-cavity, but quite as long as compared with the width of the notch. Length, entire, 16·6, of beak 10·6; width at notch 3·0; triangle to the teeth-line rugose. Nose groove open in front. Teeth $\frac{}{48}$, small, curved.

This skull resembles Schlegel's figure of the skull of *D. longirostris* in general form, but the beak is rather more slender, and the orbits more obliquely truncated in front.

14. Steno.

Head convex. Forehead convex. Beak moderate, tapering. Body elongate, fusiform. Pectoral fin moderate, ovate, falcate. Dorsal falcate, in the middle of the back. Skull round, subglobular. Forehead erect. Beak elongate, compressed, higher than broad, tapering in front, convex above. Triangle elongate, deep, produced rather beyond the teeth-line. Palate convex, not grooved on the side. Lower jaw elongate, compressed in front; symphysis elongate, about $\frac{1}{4}$ the length.

Steno, *Gray, Zool. Erebus & Terror*, 43, 1847.
Delphinus, sp. *Cuvier; Schlegel.*

This genus is at once known from *Lagenorhynchus* and *Delphinus* by the length, compression, and tapering form of the beak of the skull.

The fœtus of *Steno fuscus* is very peculiar for the elongated tapering head; the pectoral fins are rather large, strongly falcate; the dorsal rather beyond the middle of the back. Its tongue is flat on the top, and nearly as broad as the space between the sides of the jaws; it is entire on the edges of the sides, and slightly dilated in front, crenulated on the edge, and with a larger flat lobe in the middle of the tip. See *Zool. Erebus & Terror*, t. 26. f. 1, *a*, *b*, *c*.

* *Beak separated from the forehead by a cross groove.*

1. Steno Malayanus. The Malay Dolphin.

Grey-ash above and below; nose of skull about $\frac{2}{5}$ of the entire length; teeth $\frac{33}{36}$.

Delphinus Malayanus, *Lesson, Voy. Coq.* t. 9. f. 5; *Hist. Cetac.* 152; *Schlegel, Abh.* i. t. 1, 2. f. 2. t. 4. f. 3.
D. Capensis, *Rapp. Cetac.* t. 2. f. 1, not *Gray* nor *Cuv.*
D. Rappii, *Reichb. Cetac.* iii. 48. t. 18. f. 5. 7.

D. plumbeus, *Cuv. R. A.* i. 288; *F. Cuv. Cetac.* 151; *Mam. Lithog.* t.
D. à ventre roux, *Voy. Pole Sud*, t. 22. f. 2. t. 23. f. 3, 4.
Steno Malayanus, *Gray, Zool. Ereb. & Terror*, 43.
Inhab. Indian Ocean.

	ft.	in.
Length of animal, entire ...	5	11
,, of pectoral	1	1
Width of tail	1	11

There is a skull of *Dauphin à ventre roux* from Molucca, in the Paris Museum. The nose is very slender, attenuated. Palatal bone and intermaxillaries distinctly seen below; intermaxillaries very convex, dense; lower jaw very compressed in front; palate flat, rather convex on each side behind, very spongy.

There is a skull in the Paris Museum marked *D. plumbeus*, Malabar, *Dussumier*. It measures as follows: Length, 22; beak, $13\frac{1}{2}$; teeth-line, 12; width at notch, $4\frac{1}{3}$; symphysis of the lower jaw, $5\frac{1}{2}$ inches; teeth, $\frac{3}{3}\frac{7}{4}-\frac{3}{3}\frac{7}{7}$, large; beak elongated, higher than wide, compressed in front; triangle extending rather before the teeth-lines. In the Anatomical Museum of the Jardine des Plantes is a skull of a fœtal specimen of this species, from Malabar, which is 12 inches long, with the beak $8\frac{1}{2}$ inches long, and $2\frac{1}{2}$ wide at the notch. The symphysis of the lower jaw is $2\frac{1}{2}$ inches long. The bones are not united; the upper teeth are 36; they are as large as those of the adult skull, and all enclosed in a cartilage and very close together. From this skull it is evident that these animals are born with the full number of teeth, which only elongate as they gradually develope.

2. Steno frontatus. The Fronted Dolphin.

Nose of skull about $\frac{2}{3}$ of its entire length, three times as long as its width at the notch, rather compressed, rounded in front; lower jaw subangular and bent up at the end, united about $\frac{1}{3}$ of its length; teeth $\frac{2}{2}\frac{1}{1}-\frac{2}{2}\frac{4}{4}$, often rather rugose.

Skin rough, back greyish black, belly dirty white. Female 9 feet long.—*Dr. Dickie.*

Delphinus frontatus, *Cuv. Oss. Foss.* v. t. 21. f. 7, 8. t. 22. f. 8; *R. A.* i. 288; *Gray, List Mam. B. M.* 105.
D. Reinwardtii, *Schlegel, Abh.* i. 21. t. 2. f. 3, 4. t. 4. f. 7.
Steno frontatus, *Gray, Zool. Erebus & Terror*, 43.
Inhab. Indian Ocean. Pacific.

a. Part of the upper jaw, teeth large.
b. Bones of the ear. India. Presented by General Hardwicke.
c, d, e. Three skulls.

Dimensions of skull in the (no. 1) British Museum: no. 2. of skull of female in Dr. Dickie's Collection:—

	No. 1.		No. 2.	
	in.	lin.	in.	lin.
Length, entire	20	6	22	0
„ of nose	12	0	13	5
„ teeth-line	10	0	11	0
Width at notch.....	3	10		
„ at orbit	7	9	7	0
„ of middle of beak	2	0	2	0
„ of lower jaw	17	0	18	0
„ of symphysis.....	5	6	6	0

Var. 1. Lower jaw rather straighter below and rather wider behind, teeth $\frac{2}{2}\frac{4}{4}$.

Var. 2. Nose much compressed on the side and depressed above, rather larger, rather more than three times as long as wide at the notch; teeth $\frac{2}{2}\frac{4}{4}$.

Var. 3. Tooth-series rather longer, 10″ 6‴; teeth $\frac{2}{2}\frac{4}{4}$; lower jaw like var. 1.

Dr. Dickie's skull: Teeth $\frac{2}{2}\frac{2}{3}$; the two front of lower jaw are small, and separated from the rest.

A fœtus extracted from the womb of Dr. Dickie's specimen had the tail convex at the end and emarginate.

D. Geoffroyi, *Desm.* The type of the genus *Inia* has been confounded with this species.

3. Steno compressus. The Narrow-beaked Dolphin.

Nose of skull much compressed, attenuated at the tip, $\frac{3}{5}$ the entire length, $3\frac{1}{2}$ times as long as its width at the notch; teeth conical, acute, $\frac{2}{2}\frac{6}{6}$; head narrow, and rather compressed at the orbit.

Delphinus compressus, *Gray, Cat. Mam. B. M.*
Steno compressus, *Zool. Erebus & Terror*, 43. t. 27, skull.
Inhab. ——?

a. Skull. The specimen figured in the *Voyage of the Erebus and Terror*, pl. 27.

b, *c*. Two skulls.

d. Skull. South Sea. Antarctic Expedition. Presented by the Admiralty.

	in.
Length, entire	$20\frac{1}{2}$
„ of nose	13
„ of lower jaw	17
„ of symphysis.....	$6\frac{1}{2}$
Width of notch	$3\frac{1}{2}$
„ at orbit	$6\frac{3}{4}$

The skulls of this species are easily known from the former by being much more slender and more attenuated in front, and by the head, though longer, being $2\frac{1}{2}$ inches narrower over the orbit; lower jaw nearly straight below, united for more than $\frac{1}{3}$ its length.

It may be the same as *D. rostratus*, but the teeth are more numerous; and Cuvier's figure, which he thought might be Breda's species, certainly much better represents a common Indian species than this.

In one of the skulls the nose is rather shorter and more depressed.

4. STENO ATTENUATUS. The SLENDER-BEAKED DOLPHIN.

Nose of skull $\frac{3}{5}$ of entire length, $1\frac{1}{2}$ the length of the skull, $2\frac{3}{4}$ the length of the width of the notch, slender, tapering in front; intermaxillaries forming a long triangular part of the front of the palate; vomer elongate, in middle of palate; teeth $\frac{42}{42}$.

Delphinus attenuatus, *Gray, List Mam. B. M.* 105.
Steno attenuatus, *Gray, Zool. Ereb. & Terror*, 43. t. 28, skull.
Inhab. Cape Horn. Mus. Coll. Surg. Edinb.

a. Skull. Presented by Mrs. Ince.
b. Skull.
The specimen figured in the *Voyage of the Erebus and Terror*, pl. 28.
c. Skull. 9° N. lat. Presented by A. Pearson, Esq.

Measurement of the three skulls:—

	a.		*b*.		*c*.	
	in.	lin.	in.	lin.	in.	lin.
Length, entire	15	9	16	6	15	6
„ of nose	8	9	10	0	9	3
„ of lower jaw.....	13	3	.....		13	0
Breadth of temples	6	0	6	5	6	1
„ of notch	3	3	3	3	3	6
„ of middle of beak	1	6	1	7	1	8
„ of intermaxillaries	0	1	0	1	0	1

Delphinus pseudodelphis, *Wiegm. Schreb.* t. 358, skull; *Reichb. Cetac. Anat.* t. 18. Teeth $\frac{43}{43}$ or $\frac{44}{43}$. "Skull in Mus. Leyden the form of *D. Malayanus*, but beak shorter, and teeth shorter and thinner, very like those of *D. Delphis*. Palate not grooved. Symphysis of lower jaw rather long." May be the same as the *Steno attenuatus*, but the Museum copy of Schreber does not contain the plate referred to.

5. Steno fuscus. The Cuban Steno.

Black above and below, in spirits. Head conical; gradually tapering into a rather long nose, without any separating groove, with five black whiskers on each side. Teeth —— ?

Steno fuscus, *Gray, Zool. Ereb. & Terror*, t. 26. f. 1, fœtus and tongue.
Inhab. Cuba, *W. S. MacLeay, Esq.*

a. Fœtus in spirit, not in good state. Presented by W. S. MacLeay, Esq.

"** *Beak scarcely separated from the forehead.*"

6. Steno? rostratus. The Beaked Dolphin.

"Forehead gradually shelving to the beak" (*Cuv.*); the skull with the nose as long as the brain-cavity; teeth $\frac{2}{2}\frac{1}{1}-\frac{2}{2}\frac{3}{3}$, rather large. Black, lower lip and body beneath rosy white, not separated by distinct lines, lower part of the sides black-spotted.

Delphinus rostratus, *Cuv. Ann. Mus.* xix. 9; *R. A.* i. 289; *F. Cuv. Mam. Lith.* t. ; *Cetac.* 156. t. 10. f. 2, not *Shaw*.
Dauphin de Breda, *Cuv. Oss. Foss.* 278, 296. v. 400. t. 21. f. 7, 8.
Delphinus Bredanensis, "*Cuv.*"; *Fischer, Syn.* 505, from *Cuvier, Oss. Foss.*
D. oxyrhynchus, *Jardine, Nat. Lib.* t. 27, cop. from *F. Cuv.*; *Vert. Nederl. Hist.* 1829, 236. t. 1, 2.
D. planiceps, *Breda; Schlegel, Abh.* t. 4. f. 8, teeth.
Steno? rostratus, *Gray, Zool. Erebus & Terror*, 43.
Inhab. North Sea. Holland, *Breda.* Brest, *D'Orbigny.*

"M. Blainville, who observed a skull of this species in the museum of Mr. J. Sowerby, says it had 22 teeth in each jaw, and the symphysis $\frac{2}{3}$ the entire length," *Desm. Dict. H. N.* ix. 160. If this is not a mistake for $\frac{1}{3}$, it will at once separate it from the other *Stenos*, and connect it with *Pontoporia*.

The skulls named *D. rostratus* in the Paris Museum are very like the Museum specimens of *Steno frontatus*. The nose is compressed in front. Teeth $\frac{2}{2}\frac{1}{1}-\frac{2}{2}\frac{1}{1}$. Length, entire, $21\frac{1}{2}$; nose $12\frac{1}{4}$, of symphysis of lower jaw $5\frac{1}{2}$; width at preorbital notch 4 inches.

1. Delphinus Chamissonis, *Wiegm.*; *Schreb. Supp.* t. 359; *Reichb. Cetac.* 126. 66. t. 22. f. 64, 65;

2. Delphinus hamatus, *Ehrenb.*; *Reichb. Cetac.* No. 1, *Anat.* t. 21. f. , Beak $1\frac{1}{2}$ the length of the skull, $2\frac{1}{2}$ the width at the notch; teeth $\frac{2}{2}\frac{4}{5}$;—probably belong to this genus.

The following species of this family require further examination:—

1. D. velox, *Dussum.*; *Cuv. R. A.* i. 288; *F. Cuv. Man. Lith.* t. ; *Cetac.* 154.
   Teeth $\frac{4}{4}\frac{1}{1}$; nose rather more elongated.—*Cuvier.* Teeth $\frac{3}{3}\frac{6}{2}$; grey, lips and lower jaw whitish.—*F. Cuv.*
   Inhab. Ceylon.

2. Delphinus Boryi, *Desm. Mam.* 515; *Desmoulin, Dict. Class. H. N.* t. 141. f. 2.
   Inhab. Madagascar. (Coast of New Holland?)

3. ? D. Bertini, *Desm. Mamm.* 516, from Dauphin de Bertin, *Duham. Pech.* ii. 41. t. 10. f. 3.
   Cachalot, junior, *Blainv.*
   Beak distinct; lower jaw toothless.
   Inhab. ——?

4. D. Chinensis, *Desm.*, from *Osbeck, Voy.*
   Shining white.
   Inhab. Chinese seas.

5. Delphinus coronatus, *Freminville, Nov. Bull. Soc. Phil.* iii. 56. 78. t. 1. f. 2, *a*, B; *Desm. Mam.* 512.
   Delphinorhynchus coronatus, *Lesson, Man.* 405; *Fischer, Syn. Mam.* 505.
   Black; forehead with two concentric yellow circles; beak very long; teeth $\frac{2}{2}\frac{4}{5}$; dorsal fin very minute.
   Inhab. Spitzbergen!

6. Delphinus Pernettyi, *Desm. Mam.* 543.
   D. Pernettensis, *Blainv.*; *Desm. N. D. H. N.* ix. 154.
   D. Delphis, var. *a*, *Bonnat. Cetol.* 21.
   Delphinorhynchus Pernettyi, *Lesson, Man.* 406, from Dauphin, *Pernett. Voy.* 99. t. 2. f. 1.
   Hab. ——?

7. Phocæna pectoralis, *J. Peale, U.S. Exp. Exped.*
   Bluish black; a white spot on each side of the breast, in front of the pectoral fin; a frontal band of bright slate-colour extends a short distance behind the eyes; vent, abdomen, and edge of lips reddish white. Teeth $\frac{2}{2}\frac{3}{3}-\frac{2}{2}\frac{3}{3}=92$. Length 104, end of snout to corner of mouth $11\frac{1}{2}$, to eye 13 inches.
   Inhab. Island of Hawai; Hilobay.

8. Phocæna australis, *J. Peale, U.S. Exp. Exped.* 33. t. 6. f. 2.
   Snout black; fins (all) dark slate-colour; sides paler or

grey; a white lateral line commences opposite the posterior edge of the dorsal fin, and reaches the tail; beneath white, which joins the grey of the side by an undulated line. Teeth $\frac{3}{2}\frac{1}{9}-\frac{3}{2}\frac{1}{9}=120$. Length 84, pectoral fin 16 inches.

Inhab. South Atlantic Ocean; Coast of Patagonia.

9. Delphinus lateralis, *J. Peale, U.S. Exp. Exped.* 35 (t. 8. f. 1. ined.).

Snout small; body thick, but much compressed behind the dorsal; light purplish grey beneath, while a dark lateral line edged with spots separates the colours of the upper and under part of the body; a separate line, paler in colour, branches from the lateral line opposite the pectoral fin and passes downwards and backwards; another connects the eye and pectoral fin; fins and snout black. Teeth $\frac{4}{4}\frac{1}{1}, \frac{4}{4}\frac{1}{1}=164$. Length 90 inches.

Inhab. Pacific Ocean, lat. 13° 58′ N., long. 161° 22′ W.

10. Delphinus albimanus, *J. Peale, U.S. Exp. Exped.* 33 (t. 7. f. 1. ined.).

Snout, head, back, tail and dorsal fin blue-black; belly and pectoral fin white; sides pale tawny; eyes small, brown, and surrounded with a black ring, which joins the black of the snout; body between the dorsal fin and tail very much compressed. Teeth $\frac{4}{4}\frac{3}{7}-\frac{4}{4}\frac{3}{7}$. ♀ Length 78; snout $5\frac{3}{4}$; pectoral fin $11\frac{1}{2}$; of end of snout to eye 12 inches.

Inhab. Coast of Chili.

11. Delphinus albirostratus, *J. Peale, U.S. Exp. Exped.* 34 (t. 6. f. 2. ined.).

Elongate, dorsal fin nearer the head, dark blue grey; fins and back nearly black; a dark line connects the corner of the mouth with the pectoral fin; front and sides dark grey, covered with small vermicular white spots; end of the snout white, commissure of the lips pale yellow.

Inhab. Pacific Ocean, lat. 2° 47′ S., long. 174° 13′ W. 22 Aug.

The following species have been named and figured by the sight caught of them when swimming!

D. albigenas, *Quoy, l. c.* t. 11. f. 2.

D. rhinoceros, *Quoy, l. c.* t. 11. f. 1, both from New Holland.

D. lunatus, *Lesson, Voy. Coq.* t. 9. f. 4, Tunenas *of the Chilians,* from Chili.

D. leucocephalus, D. minimus and D. maculatus, *Lesson, Voy. Coq.* i. 183.

The following species have been named only from figures or very slight descriptions:—

D. Senedetta, D. Commersonii, D. niger and D. Pernettii, *Lacep.*

D. Epidon and D. Mongitori, *Rafinesque.*

15. Pontoporia.

Skull roundish; beak very long, compressed, with a strong groove on each side above; eyebrow with a long, cylindrical crest; lower jaw compressed, with a deep groove on each side; symphysis very long. Teeth small, subcylindrical, smooth, rather hooked, acute.

Head with very long, slender beak. Dorsal fin high, falcate, central; pectoral fins rather elongate, sublunate.

Pontoporia, *Gray, Zool. Ereb. & Terror*, 46, 1846.

Delphinus, sp. *Freminville.*

Stenodelphis, *Gervais, D'Orb. Voy. Amér. Mérid.*, not characterized.

1. Pontoporia Blainvillii. The Pontoporia.

Skull, with the tubercles behind the blow-holes, broad, slightly convex; eye-brows with a strong, longitudinal crest; upper and lower jaw with a deep, well-defined ridge on each side. Teeth $\frac{4}{4}\frac{4}{4}$, small, conical, hooked, smooth; symphysis more than half the length of the lower jaw.

Delphinus Blainvillii, *Freminville, Mus. Paris.*

D. Blainvillei, *Gervais, Bull. Soc. Philom.* 1844, 38; *Institute*, 1844.

D. (Stenodelphis) Blainvillei, *Gervais & D'Orb. Voy. Amér. Mérid. Mam.* t. 23, skull; *Reichb. Cetac.* 128. 70. t. 24. f. 78.

Pontoporia Blainvillii, *Gray, Zool. E. & T.* 46. t. 29, skull.

Inhab. Monte Video. Skull, Mus. Paris. *M. Freminville.*

M. Freminville described the Dolphin belonging to the skull as white, with a black dorsal band, and 4 feet long.

	in.	lin.
Length of skull	12	6
„ of beak	8	0
„ of symphysis	5	9
„ of teeth-line	5	4

M. D'Orbigny believes the dolphin he observed on the coast of Patagonia, of which the following is a description, is probably the same as *Stenodelphis Blainvillei*; it is figured *Voy. Amér. Mérid.* t. 23. The skull of this animal was not examined nor preserved.

Blackish, pale beneath, with a white streak along each side from behind the blower, where it is broadest and gradually becoming narrower behind, not quite reaching to the tail.

According to Desmarest, Freminville saw a dolphin on the coast of Brazil, which was 15 feet long, with a very convex forehead; ashy, with a white streak on each side of the head, on the back, throat and belly.

B. *Jaws much compressed. Symphysis of the lower jaw very long. Dorsal none. Teeth in both jaws rugose.* Fluviatile.

d. *Skull with the maxillary bones simple, expanded over the orbit. Teeth conical, with a tubercle on inner side. Pectoral fins or paddles ovate or oblong.* Iniana.

Iniana, *Gray, Zool. Erebus & Terror*, 45.

16. Inia.

Head rounded, convex. Nose produced, nearly cylindrical, tapering, hairy. Blowers oblique, nearly above the pectoral fins. Ear-hole distinct. Teeth numerous, rugose, grooved, permanent; the front hooked; the hinder, close at the base, with a large rounded tubercle on the inner side. Dorsal fin none, but the back is keeled, ovate and subtriangular behind. Body compressed behind. Pectoral fin large. The skull depressed, with the nose twice as long as the brain-cavity, compressed, with a groove along each side. Temporal cavity very large, edged above by a strong crest, and the orbital hole very short, roundish. Muzzle of the young hairy.

Inia, *D'Orbigny, Ann. Sci. Nat.*; *Nov. Ann. Mus.* vii. t. 22.
Delphinus, sp. *Desm.*
Delphinorhynchus, sp. *F. Cuvier.*

1. Inia Geoffroyii. The Inia.

Delphinus Geoffroyii, *Desm. Mam.* 512.
D. Geoffroyensis, *Blainv. Desm. N. Dict. H. N.* ix. 151.
"D. à bec mince," *Cuvier, R. A.* i. 278?
Delphinorhynchus frontatus, *F. Cuv. Cetac.* 121.
Delphinorhynchus Geoffroyii, *Lesson, Man.* 405.
Inia Boliviensis, *D'Orbigny, N. Ann. Mus.* vii. t. 22. f. 3, cop. *F. Cuv. Cetac.* 166. t. 10*. t. 11; *D'Orb. Voy. Amér. Mérid.* t. 22, animal and skull.

Pale blue, reddish beneath; fins and tail olive, some reddish, others blacker; teeth $\frac{3}{3}\frac{3}{4}-\frac{3}{3}\frac{4}{4}$.

Inhab. Upper Peru or Bolivia, River Moxos. Animal and skull Mus. Paris.

The following is the measurement of D'Orbigny's specimen :—

	met.	cent.
Length, entire	1	4
„ of muzzle	0	23
„ to eye	0	34
„ to blower	0	40
„ to ears	0	43
„ to pectoral fin	0	52
„ to dorsal fin	1	30
„ of pectoral	0	42
Breadth of pectoral	0	18
„ of caudal	0	50
Height of dorsal	0	9
Circumference of thickest part	1	4

The specimen in the Paris Museum, which Desmarest described as *Delphinus Geoffroyii*, is evidently this species. It was taken from the Lisbon Museum, and is covered with paint. It has no dorsal, and it shows the teeth sufficiently to exhibit their rugose state, and the large and peculiar tubercle on the inner side of the hinder ones, which is characteristic of this genus, and which appear to have been overlooked by M. Desmarest, who describes them as "coniques, obtuses, avec une sorte de collet inférieurement, et entre leur surface est rugueuse."

This painted Lisbon specimen, according to M. F. Cuvier, was the type on which Cuvier described his *Delphinus frontatus* (*Cetac.* 122).

The skull in the Paris Museum, from M. D'Orbigny, has a prominent tubercle behind the blow-holes: eyebrows convex and rugose on the top; beak with a slight groove on each side above; lower jaw with scarcely any ridge on the sides; the symphysis long, occupying more than half the length of the lower jaw; teeth large, regular, hinder ones with a rounded, regular tubercle on the inner side.

	in.
Length of skull	19
„ of beak	12
„ of symphysis	9
„ of teeth-line	11

The *Delphinus macrogenius* (*Fischer, Cuvier, Oss. Foss.* v.312. t. 23. f. 4, 5. f. 9–11) appears to belong to this tribe.

e. Skull with the maxillary bones bent up in front of the blower and forming a vault. Teeth compressed. Paddles or pectoral fins fan-shaped, truncated at the end. Platanistina.

Platanistina, *Gray, Zool. E. & T.* 45, 1846.

17. Platanista.

Head convex, beak compressed, curved up at the end; teeth compressed; dorsal none; back keeled in the place of the fin, and obliquely truncate behind; pectoral fan-shaped, truncated.

Platanista, *Pliny*; "*Cuvier*, 1829," fide *Lesson*, *Tab. Reg. Anim.* 198; *Wagler*, *N. S. Amph.* 35, 1830; *Gray*, *Illust. Ind. Zool.*
Platanistina, *Gray*, *Zool. Ereb. & Terr.* (misprint).
Susu, *Lesson*, *Œuv. Buffon*, i. 215, 1828; *Tab. Reg. Anim.* 198.
Delphinorhynchus, sp. *Lesson*.
Delphinus, sp. *Lebeck*.

There is a head of a young specimen in the *Anat. Mus. Univ. Edin. Knox Cat.* n. 105. The reflexed portion of the maxillary bones only partially developed; their inner sides are cellular and radiately ridged with a ragged edge.

As the animal increases in age, the ends of the jaws become more turned up, and the teeth enlarge and become thicker at the base.

1. Platanista Gangetica. The Sou Sou.

Blackish lead-colour, rather paler beneath.

Delphinus Gangeticus, *Lebeck*, *N. Schrift. Berlin, Natur.* iii. 280. t. 2; *Home*, *Phil. Trans.* 1818, 417. t. 20; *Roxburgh*, *Asiatic Researches*, vii. 170. t. ; *Desm. Mam.* 513; *Fischer*, *Syn.* 506; *Cuvier*, *Oss. Fos.* v. t. 22. f. 8–10.
Delphinorhynchus gangeticus, *Lesson*, *Man.* 406.
Platanista gangetica, *Gray*, *Illust. Ind. Zool.* t. ; *F. Cuv. Cetac.* 252; *Gray*, *Zool. E. & T.* 45; *Cat. Mam. Brit. Mus.*
Delphinus Shawensis, *Blainv. in Desm. Dict. H. Nat.* ix. 153, from *spec. in Mus. Coll. Surg.*
D. rostratus, *Shaw*, 514, from *spec. in Mus. Coll. Surg.*; *Home*, *Phil. Trans.* 1820, t. 20.
Platanista, *Lesson*.
Susu, *Œuv. Buffon*, i. 215. t. 3. f. 3, 1828.
Platanista, *Plin. Hist. Nat.* ix. ch. 15.
Dauphine du Gange, *Cuvier*, *Oss. Foss.* v. t. 22. f. 8, 10, from *spec. Shaw*.
Inhab. India, Ganges.

a. Stuffed specimen. India, Ganges.
b. ,, ,, Younger. India, Ganges.
c. Skull: end of nose nearly straight, young. India, Ganges.
d. ,, end of nose recurved. India. Presented by Gibson Rowe, Esq.

Suborder II. SIRENIA.

Body rather hairy. Muzzle bristly. Nostrils 2, separate, apical, lunate, valvular. Fore-limbs arm-like, clawed; hinder compressed, expanded, tail-like. Teats 2 pectoral. Teeth of two kinds.

Cete II. pars, *Gray, Ann. Phil.* 1825.
(Natantia) Sirenia, *Illiger, Prod.*139,1811; *Brandt, Symb. Sirenologia*, 132, 1846.
Sirenia, *Gray*; *Selys Longchamps*, 1842; *Schinz. Mam.* 491.
M. Amphibies, pars, *Cuvier, Tab. Elem.* 1798; *Dum. Z. A.* 1806.
M. Amphibia, pars, *Rafin. Anal. Nat.* 60, 1815.
Onguligrades anomaux, *Blainv.* 1816.
Les Cétaces Herbivores, *F. Cuv.* 1829.
Cetacea herbivora, *Gray, Lond. Med. Rep.* xv. 309, 1821; *Latr. Fam. Nat.* 1825, 64; *Brandt.*
Cete A., *Fischer, Syn.* 1828.
Ceti hydræoglossi, § *a*, *Wagler, N. S. Amph.* 32, 1830.
Heterodonta, Hydraula, ou Sireniæ, *Lesson, N. Reg. Anim.* 134, 1842.
Manatina, *Reich. Syn. Mam. Cetac.* 15.
Silliche, *Oken, Lehrb. Nat.* 684.

Fam. 4. MANATIDÆ.

Muzzle bristly; lips single; front of upper and lower jaws each covered with a hard, horny, porous, corrugated plate. Cutting teeth 2 or 4 above, large, conical and exserted, or small, abortive, and early deciduous. Canine none. Grinders $\frac{3}{3}-\frac{3}{3}$ to $\frac{2}{2}-\frac{2}{2}$, tubercular, the front one deciduous. Nostrils 2, separate, lunate, valvular. Eyes small; ears none. Teats 2 pectoral. Stomach divided into four cells, two of them appendaged.

Sirenia, *Illiger, Prod. Mam.* 181.
Manatidæ and Dugongidæ, *Gray, L. Med. Rep.* xv. 309, 1821; *Ann. Phil.* 1825.
Trichecus, pars, *Cuv. Tab. Elem.* 1798.
Manatidæ, pars, *Selys Longchamps*, 1842.
Halicoridæ, *Gray, Ann. Phil.* 1825; *List Mam. B. M.* 106.
Sirenia dentigera seu Halicoreæ, and Sirenia edentata seu Rhytiniæ, *Brandt, Symb. Sirenol.* 132, 1846.
Amphibia tetrapia Odobenia, Amphibia Diopia, *Rafin. Anal. Nat.* 60, 1815.
Sireniæ, pars, *Lesson, N. Reg. Anim.* 154.
Manatina, *Reichb. Syn. Man.* 15.

Synopsis of Genera.

1. Manatus. Tail rounded. Grinders $\frac{6}{6}$ or $\frac{8}{8}$, tubercular.
2. Halicore. Tail forked. Grinders $\frac{2}{3}$, flat tipped; upper cutting teeth produced, tusk-like.
3. Rytina. Tail forked. Grinders none.

1. Manatus.

Cutting teeth 2, very small, rudimentary, early deciduous. Canine none. Grinders $\frac{6}{6}$–$\frac{8}{8}$, with two or three transverse three-tubercled ridges. Lips bristly. Back with scattered hairs. Fins with four rudimentary hoof-like nails. Toes surported with phalanges. Tail rounded or truncated at the end. Pelvis bone deficient? cæcum bifid at the tip.

Manatus, *Rondel, Pisc.* 490; *Storr. Prod.* 41, 1780; *Cuvier, R. A.*; *Illiger, Prod.* 140, 1811; *Rafin. Anal. Nat.* 61, 1815.
Trichechus, sp. *Linn. S. N.* ed. 6. 39. ed. 10. ed. 12; *Erxleb. Mam.* 599.
Odobenus, pars, *Brisson.*
Trichecus manatus, *Oken, Lehrb. Nat.* 687, 1815.
? Nemodermus, *Rafin. Anal. Nat.* 60, 1815.

The number of grinders varies according to the age or state of the specimens. When complete they are $\frac{6}{6}$–$\frac{8}{8}$, but the three front on each side are often deciduous; hence Home (*Phil. Trans.* 1821, 390) describes them as $\frac{6}{6}$–$\frac{8}{6}$, and Cuvier as $\frac{4}{6}$–$\frac{8}{6}$.

1. Manatus australis. Manatee.

Grey black.

Manatus, *Rondel, Pisc.* 490; *Klein, Pisc.* ii. 32; *Brisson, R. Anim.* 49, 352.
Kleiner Manate (Manatus minor?), *Zimmermann, Geog.* ii. 426, 388.
Lamantin, *Condam. Voy.* 154; *Buffon, H. N.* xiii. 377, 425. t. 57.
Trichechus manatus, *Linn. S. N.* i. 49; *Gmelin, S. N.* i. 60; *Schreber, Saugth.* t. 8, cop. *Buffon.*
Manatus australis, *Tilesius, Jahrb.* i. 23; *Ozeretskowsky, Nov. Act. Petrop.* xiii. 375. t. 13; *Fischer, Syn. Mam.* 501; *Reichb. Syn. Mamm.* 16; *Icon. Cetac.* t. 23. f. 72, 73, from *Humboldt, Anat. Cetac.* t. 27, 28, 29.
Manatus (Trichechus manatus) australis, *Illiger, Prod.* 110.
Manatus Americanus, *Desm. Mamm.* 507; *N. Dict. H. N.* xvii. 262. t. 96; *Home, Lectures Comp. Anat.* iv. t. 55; *Schreber,*

Saugth. t. 378. t. 380. f. 1, 2. t. 381. f. 3; *Guerin, Icon. Mam.* t. 46; *Lesson, Cetac.* 63.

Manate de l'Orenoque, *Humb.*; *Wiegm. Arch.* 1838, 1, 18. t. 1, 2, anatomy.

Var.? Manatus latirostris, *Harlan, Journ. Acad. N. S. Philad.*; *Fauna Amer.* 277; *Fischer, Syn.* 502; *Reichb. Syn. Mam.* 17; *Icon. Cetac.* t. 23. f. 74; *Anat.* t. 27. f. ; *Wagner in Schreb. Saugth.* t. 379. t. 381. f. 2, 5.

Manatus australis (Surinam), *Schlegel, Abhand.* t. 5. f. 3, 4, 5, 6.

Lamantin d'Amérique, *Cuvier, Ann. Mus.* xiii. 273. t. 19. f. 1–4; *Oss. Foss.* v. 242. t. 19. f. 2, 3, 9, 10, 11, 14, 15, 16, 17, 18, 19; *Home, Phil. Trans.* 1821, 390. t.

Guiana Manate, *Penn. Quad.* ii. 297.

Manate Clusii and Oronoko Manate, *Penn. Quad.* ii. 298.

Var.? Manatus fluviatilis, *Illiger; Wagner in Schreb. Saugth.* t. 279, head and jaws, cop. *Reichb. Icon. Cetac.* t. 23. f. 75.

Anat. *Home, Lectures,* t. 55; *Cuvier, Oss. Foss.* v. t. 19; *Blainv. Osteog.* t. ; *Wiegmann, Arch.* 1838, 18. t. 2.

Hab. Tropical America. Surinam, *Schlegel.* Guiana, West Indies, *Home.* Jamaica, *Sloane.* Florida?

a. Fœtus, in spirits. Jamaica, Mus. Sloane.
b. Skull. South America?
Blainv. Osteog. Atl. G. Manatus (latirostris), pl. 111.
b. Skull. Jamaica. From Mr. Gosse's Collection.

2. Manatus Senegalensis. Lamantin.

Lamantin, *Adanson, Voy. Seneg.* 143.

Lamentyn, female, *Barbot, Guin.* 562. t. 7, bad.

Lamantin du Senegal, *Daub. in Buffon, H. N.* xiii. 431, no figure; *Cuv. Oss. Foss.* v. 254. t. 19. f. 4, 5, skull; *Robert. Compt. Rendu Acad. Sci.* 1836, 363.

Trichecus Manatus Africanus, *Oken, Lehrb. Nat.* 688, 1815.

Manatus Senegalensis, *Desm. Mam.* 508; *Lesson, Œuv. Buffon,* i. 69; *N. Reg. Anim.* 155; *Fischer, Syn.* 502; *Schreb. Saugth.* t. 381, skull, t. 380, f. 3, 4; *F. Cuv. Cete,* t. ; *Gray, List Mam. B. M.* 106; *Edin. Journ. Sci.* ii. 186; *Lesson, Cetac.* 69; *Hamilton, Jardine, Nat. Lib.* viii. 298. t. 19. f. 2, 3; *Reichb. Syn. Mam.* 17; *Anat. Cetac.* t. 28, from *Cuvier.*

Womanfish, *Purchas,* ii. 1446.

Round-tailed Manate, *Penn. Quad.* ii. 296. t. 102.

Anat. *Cuvier, Ann. Mus.* xiii. t. 19. f. 4, 5; *Oss. Foss.* v. t. 17. f. 2, 3, skull; *Schreber, Saugth.* t. 381; *Jardine, Nat. Lib.* viii. t. 19. f. 2, 3; *Reichb. Anat. Cet.* t. 28; *Blainv. Osteog.* t.

Hab. West Coast of Africa.

a. Stuffed. West Coast of Africa. Presented by Messrs. Forster, Smith, and Co.

Var.? Manatus nasutus, *Wyman, Proc. Boston N. H. S.* ii. 198; *Amer. Journ. Sci.* ix. 13. t.

Inhab. W. Africa, Vavallo River. Called Ne-hoo-le. Imperfect skull, Mus. Boston Nat. Hist. Soc.

2. Halicore.

Cutting teeth $\frac{4}{4}$; two inner upper and the four lower deciduous; the two outer upper conical, elongate, permanent. Canine none. Grinders $\frac{3}{3}$–$\frac{3}{3}$, truncate, with two lateral grooves. Lips bristly; fore-feet fin-shaped, clawless. Caudal fin lunate, sinuated. Body hairy. Cæcum undivided. Pelvis bones distinct.

Dugungus, *Tiedemann, Zool.* i. 554.
Odobenus, *Rafin. Anal. Nat.* 60, 1815.
Dugong, *Lacep.*
Halicore, *Illiger, Prod.* 140, 1811; *Oken, Lehrb.* 689, 1818; *Schinz.* 493; *Knox, Cat. Prep. Whale*, 35, 1838.
Rosmarus, pars, *Boddaert.*
Trichecus, pars, *Erxleb.*

Cervical vertebræ 7, dorsal 19; ribs 19; lumbar, sacral and coccygeal, 30=56; V-shaped bone commencing between the 32nd and 33rd vertebræ. Weight of cranium and lower jaw, 7 lbs. 6 oz.; of bones of trunk, 20¼ lbs.; of pectoral extremities, 3 lbs.=30 lbs. 10 oz., the weight of an entire male adult human skeleton being only 12 lbs. The bones are extremely dense and of stony hardness; they contain no medullary cavity, but consist of a texture nearly as close as ivory and capable of being polished.—*Knox, Cat. Prep.* 35, 1838.

The tusks and teeth are "composed of two substances, a cortical and a medullary; the cortical, although holding the situation of enamel, is similar to bone, and possesses none of the qualities of that peculiar substance; the medullary portion is extremely hard, of a dense texture and homogeneous appearance." —*Knox, Cat. Prep.* 36.

The front portion of the upper and lower jaws is covered in the recent state with a horny covering. The outer surface presents numerous rough-looking elevations, many of them darker around the circumference than in the centre; these are arranged in rows of 7 or 8 each, running from each side towards the mesial line, but with a slight inclination from behind forward. The whole substance is composed of bristles about $\frac{1}{8}$ of an inch in length, arranged vertically, and agglutinated together by a substance of a horny nature. Since examining the Dugong, now seven years

ago, from which the preparations nos. 111 and 112 were procured, I have been convinced that Steller was simply describing a similar substance, no doubt on a larger scale, as the animal is said to reach 26 feet. The substance is neither teeth nor analogous to teeth, and we might with the same propriety describe the rough and semi-horny substance covering the osseous palate of the sheep, cow, &c. as a tooth. As a proof that it is not analogous even to teeth, the surface of the lower jaw contains rudimentary teeth imbedded deep in the osseous texture.—*Knox, Cat. Prep.* 37, 1838.

Cervical vertebræ all free; 1st and 2nd, no lateral process; 3rd and 7th thin, with small lateral processes.—*Mus. Edinb.* 47.

Dr. Knox suspects there are two species, one with what Sir E. Home calls the permanent, and the other, erroneously, as Dr. Knox suspects, milk tusk.—*Trans. Roy. Soc. Edinb.* ii. 395.

1. Halicore Dugong. Indian Dugong.

Blade-bone broad, subtrigonal.

Hal. (Trichechus) Dugong, *Illiger, Prod.* 140; *Schreb. Saugth.* t. 380. f. 5, 6, t. 382, 383; *Reichb. Syn. Mam.* 16; *Icon. Cetac.* t. 22. f. 70, 71, from *F. Cuvier & Quoy.*

Hal. Dugung, *F. Cuv. Mam. Lith.* t. ; *Guerin, Icon.* t. 46; *Lesson, N. R. Anim.* 154; *Fischer, Syn. Mam.* 503; *Gray, List Mam. B. M.*

Hal. cetacea, *Illiger, Abhand. Berl. Akad.* 1813.

Hal. Indicus, *Desm. Mam.* 509; *Schreb.* ii. 267; *Quoy et Gaim. Voy. Astrol.* t. 27; *Owen, Jukes' Voy. Fly*, ii. 323, 325, 327.

H. Indica, *Rapp.* 26.

Trichechus Dugong, *Gmelin, S. N.* i. 60; *Erxleb. Syst.* 599; *Zimmermann, Geog.* ii. 425; *Voy. Pole Sud, Mamm.* t. 20, 20 *a, b, c, d.*

Dugungus marinus, *Tiedem. Zool.* i. 554.

Dugungus Indicus, *Hamilton, Jard. Nat. Lib.* viii. 300.

Indian Walrus, *Penn. Syn. Quad.* 338; *Shaw, Zool.* i. 239; *Quad.* ii. 269.

Lamantin, *Lequal, Voy.*

Manati, *Banks, Pennant, Quad.* 293; *Voy. de la Caille*, 229.

Le Dugong, *Renard, Poisson. des Ind.* i. t. 34. f. 180; *Buffon, H. N.* xiii. 374. t. 56, skull; *Camper*, iii. 479. t. 7. f. 2, 4; *Cuvier, Oss. Foss.* v. 259; *N. Act. Petrop.* xiii. 374; *F. Cuvier, Mam. Lithog.* t. 97; *Raffles, Linn. Trans.* ; *Phil. Trans.* 1820, 174; *Home, Phil. Trans.* 1820, 144. t. 12, 14, 314. t. 25, 31. 1821, 390; *Comp. Anat.* t. 52, young, t. 53, skeleton.

Dugong des Indes, *Quoy et Gaim. Voy. Astrol. Mam.* 143. t. 27; *Lesson, Cetac.* 80.

Anat. *Daubenton, Buffon, H. N.* xiii. t. 56, skull; *Home, Phil. Trans.* 1821, t. 20; *Pander et Alton, Robben*, t. 5; *Cuv. Oss. Foss.* v. 259. t. 20, t. 19. f. 6, 7 (mutilated); *Volkman, Anat. Anim.* i. t. 9. f. 1; *Blainv. Compt. Rendu*, 1837, 3. f. ; *Camper*, ii. 479. t. 7. f. 2, 3, 4; *Owen, Jukes' Voy. Fly*, ii. 323, 325. f. 2, 327. f. 4, 328. f. 6; *Reichenb. Icon. Cetac.* t. 26, 33, 34, 35, 36.

Hab. Indian Ocean.

a. Animal, stuffed. Malacca.

b. Skull (adult). India. Presented by Walter Elliot, Esq.

2. Halicore Tabernaculi.

Blade-bone ——?

Halicore tabernaculi, *Rüppell, Mus. Senckenb.* i. 113. t. 6.

Hal. Dugong, var., *Reichb. Syn. Mam.* 16.

Hal. Hemprichii (Nake), *Ehrenb. Symb. Phys.* ii.

Hal. Lottum, *Ehrenb. Symb. Phys.* i.

Hab. Red Sea.

3. Halicore australis.

Blade-bone elongate, ovate.

Halicore Indica, *Rapp, Cetac.* t. 1, fœtus.

Halicore australis, *Owen, Jukes' Voy. Fly*, ii. 325. f. 1, 327. f. 3, 328. f. 5.

Manate, *Dampier, Voy.* i. 33, 321.

Whale-tailed Manate (pars), *Penn. Quad.* ii. 292.

Hab. N.W. coast of Australia.

b, c. Two upper jaws. N.E. coast of New Holland. Presented by J. B. Jukes, Esq.

d. Skull. Presented by J. B. Jukes, Esq. (lower jaw wanting).

e, f. Two skulls. Moreton Bay. Presented by Capt. Stanley, R.N. Voyage of the Rattlesnake.

g. Skull. Darnley Island, Torres Straits. Presented by the Earl of Derby.

3. Rytina.

Cutting teeth, canines and grinders, none. Muzzle blunt, lips double, outer upper bristly. Ears none. Eyes covered with a blinking membrane. Skin naked, covered with a thick, brittle or easily cracking fibrous epidermis. The fore-feet with claw-like callosities, not supported by phalanges. The tail horizontal, bifid. Teats two, pectoral. Pelvis bones distinct. Stomach simple.

Manate seu Vacca marina, *Steller, Akad. Petrop. Nov. Comm.* ii. 294. t. 14.

Rytina, *Illiger, Prod.* 141, 1811; *Oken, Lehrb. Nat.* 685; *Wagler*, 33.
Rhytina, *Brandt, Mem. Acad. Imp. Peters.* vii. 1846; *Symb. Sirenologicæ*, 1846.
Rityna, *Lesson, Nov. Reg. Anim.* 155, 1842 (misprint).
Stellerus, *Desm.*; *Cuvier, R. A.* i. 275.
Hydrodamalis, *Retzius.*

Dr. Knox (*Cat. Prep. Whale*, p. 37, 1838) shows that the substance in the palate which Steller describes, and which has been mistaken for teeth, is only a horny skin of the bent-down portion of the two jaws, common to this animal and the *Dugong*. This suggestion has been adopted by F. Cuvier (*Cetac.* 377) and Brandt in his *Sirenologia*. The latter figures them, and exhibits their structure under the microscope. This horny substance bears evidently a considerable analogy to the *baleen* of the common whale.

1. RYTINA GIGAS. The MORSKAIA KOROVA.

Black.

Manate seu Vacca marina, *Steller, N. Act. Petrop.* ii. 294.
Trichecus Manatus, *Müll. Prod. Z. Dan.*
Trichecus (Manatus) borealis, *Gmelin, S. N.* i. 60; *Oken, Lehrb. Nat.* 685.
Manatus gigas, *Zimmerm. Geog.* ii. 426.
M. borealis, *Tilesius, Jahrb.* i. 23; *Pallas, Zool. Ross. Asiat.* i. 272.
Manatus Stelleri, *Ozeretskowsky, Nov. Act. Petrop.* xiii. t. 13. f. , embryo.
Rytina Stelleri, *Illiger, Prod.* 141; *Desm. N. Dict. H. N.* xix. 574; *Reichb. Syn. Mam.* 15; *Icon. Cetac.* t. 22. f. 69, from *Steller*; *Anat. Cetac.* t. 25, from *Brandt.*
Stellerus borealis, *Desm. Mam.* 510; *Lesson, Cetac.* 88; *Jardine, Nat. Lib.* viii. 307.
Rytina borealis, *F. Cuvier, Cetac.* 41.
Rityna Stelleri, *Lesson, N. Reg. Anim.* 155.
Rhytina borealis, *Brandt, Mem. Acad. Petrop.* 1846; *Symb. Sirenolog.* 141. t. 1–4, skull; t. 5, ideal figure.
Stellere, *Cuvier, R. A.* i. 275; *Oss. Foss.* v. 256.
Whale-tailed Manate, *Penn. Quad.* ii. 292.
Hab. Arctic Ocean. Behring's Straits. Skull, imperf. Mus. St. Petersb.

The Sea Ape, *Penn. Quad.* ii. 301 (Trichecus Hydropithecus, *Shaw, Zool.* i. 247; Manatus Simia, *Illiger, Abh. Berl. Akad.* 1813; M.? Hydropithecus, *Fischer, Syn.* 502, all from Steller) is perhaps another animal of this family, if it is not a Seal?

ADDITIONS.

Page 71, ZIPHIUS SOWERBIENSIS, *add*—

a. Cast of skull. Presented by Dr. Acland.

Cast from Mr. Sowerby's specimen in the Anatomical Museum, Oxford.

Page 126, DELPHINUS MICROPS, *add*—

b. Skull, larger; the skull behind the frontal longer, slightly compressed; teeth $\frac{6}{6}\frac{6}{6}$ on each side; length, entire, 18″; tooth-line $10\frac{1}{2}$, beak 12, lower jaw $15\frac{1}{2}$; width at orbit $6\frac{1}{4}$, at notch 3, middle of beak $1\frac{3}{4}$.

This skull chiefly differs from the type skull of *D. microps* in the back of the skull being much less convex, and in its being of a rather larger size: can this depend on the sex of the specimen?

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THE END.

PRINTED BY RICHARD AND JOHN E. TAYLOR,
RED LION COURT, FLEET STREET.

CATALOGUE

OF THE SPECIMENS OF

MAMMALIA

IN

THE COLLECTION

OF THE

BRITISH MUSEUM.

PART II.

SEALS.

LONDON:
PRINTED BY ORDER OF THE TRUSTEES.
1850.

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RED LION COURT, FLEET STREET.

PREFACE.

THE chief object in preparing the present Synopsis has been, to give at one view a complete Catalogue of all the specimens of Mammalia, and their Osteological remains, at present in the British Museum Collection, and an account of the species known to exist in other collections, but which are at present desiderata in the British Museum, so as to enable travellers, collectors, and others, to assist in completing the National Collection. For this purpose, a short description has been given of all the genera and species at present known to exist in the different museums and private collections, and at the end of each description is added an enumeration, stating the state, age, country, and other peculiarities of each specimen of the kind in the Museum Collection; or when the species is not at present in that Collection, the museum, in which it has been observed, is added after the general habitat of the species.

The different individuals of each species contained in the British Museum Collection are indicated by the letters *a*, *b*, *c*, &c. When the age of the specimen is not stated, it is to be understood that it is full-grown, or nearly so; when other-

wise, its state is marked immediately after the letter by which it is distinguished ; and if the sexes are known, it is stated to be male or female. These particulars are followed by the habitat, which is given as particularly as the materials possessed by the Museum permit. Those specimens which have been presented to the Museum have the name of the donor marked immediately after the habitat.

When there is no such indication, the specimens have been either purchased or procured in exchange ; and in this case, whenever the place or person from whence they have been received gives authenticity to the specimen, or adds anything to their history, they are noted as being from such or such a collection.

The various synonyma have been given to the different divisions of the class, and to the genera and subgenera and species, and a reference made to the works in which they have been characterized or described.

In the adoption of the names for these divisions and for the names of the genera and species, it has been thought right to use, whenever it was possible, that which was first used for the purpose. As far as regards the specific name, there is comparatively little difficulty in the application of this simple rule ; but ordinal, and especially generic names, have been used by different authors in senses so widely different, and the groups which they are intended to designate have been so variously extended and restricted, that it is no easy matter to determine, where several names have been used, which of them ought to be preferred.

As every original observer will constantly make use of characters which others may have overlooked, or not thought of so much importance as further researches have shown to belong to it, even when a generic name is used, it will of necessity be often employed in a different sense, or with a

more restricted, or very rarely a more extended meaning than its original proposer applied to it. If this was not allowed, many new names must be added to the list of genera, which is already so overburdened with synonyma.

In those cases where the two sexes of the same species, or any particular individual state or variety belonging to it, have been differently named, the names belonging exclusively to the state or individual described are placed after the reference to the specimens to which they apply.

To determine with accuracy the names and synonyma of the species, the various specimens, skeletons and other remains of these animals in the museums of the College of Surgeons of London and Edinburgh, of the Zoological Society, and of the different local museums, especially those of Haslar, Norwich, Bristol, Liverpool, &c., and the various continental museums of Paris, Leyden, Berlin, Vienna, and Frankfort, have been personally examined, and in some cases the specimens contained in those museums have been sent to the Museum, so that they could be actually compared with the specimens in the Museum Collection.

JOHN EDWARD GRAY.

Oct. 1, 1850.

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CATALOGUE

OF

SEALS.

Fam. PHOCIDÆ.

Cutting teeth $\frac{6}{4}$, or $\frac{6}{2}$, or $\frac{4}{4}$, or $\frac{3}{2}$, conical or truncated; canines conical, sometimes elongated; grinders $\frac{6\cdot6}{6\cdot6}$ or $\frac{5\cdot5}{5\cdot5}$, more or less lobed or plaited. Head rounded; face more or less produced; ears very small, rudimentary or none, external; eyes large, only slightly convex. Body elongate, hairy, attenuated behind; teats 2 or 4, ventral; feet short, enveloped in the body; the fore-feet short; fingers five-clawed; the hind-feet directed backwards, and close together; toes 5-clawed; tail very short, depressed, sharp-edged on each side.

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Quadrupeda Nexopoda seu Plectropoda, *G. Fischer, Zoognom.* 12.
Nectopoda, § 2. Pinnipeda, part., *G. Fischer, Zoognomia*, 15.
Phocidæ or Brachidontia, *J. Brookes, Cat. Mus.* 36, 1828.
Trichehidæ seu Campodontia, *J. Brookes, Mus. Catal.* 37, 1828.
Otariadæ, *J. Brookes, Mus. Catal.* 37, 1828.

Their limbs are short and fin-like, supported by the same number of bones as those of other carnivorous mammalia; the arm and leg bones are much shorter; the fingers and toes are armed with claws, and are webbed together. They swim with facility, and dive for a long period: on the earth they scarcely use their limbs in walking, the fore-arms resting inactive on the sides, and the hind-feet close together, parallel on the sides of the tail; they move by the action of the ventral muscles in small jumps, or by wriggling themselves alternately from side to side. They have very large, scarcely convex eyes; the nostrils are closed by their own elasticity, and opened at the will of the animal; the sense of smell is very acute, and the convolutions of the bones and membranes of the nose are much developed.

The Seals have long been considered as one of the most difficult families of Mammalia, partly on account of their great resemblance to one another in external characters, and the changes which they undergo during their growth in colour and form, but more especially on account of the difficulty of observing them in their natural habitations.

The labours of M. de Blainville, the two brothers Cuvier, and especially of Professor Nilsson of Lund, have done much to elucidate the characters of the European species and those frequenting the eastern coast of North America,—the species found in the North Pacific are only known by the descriptions of Steller, Pallas and Temminck. Many naturalists have been inclined to consider them as identical with those found in the southern part of the Pacific Ocean, believing that the species migrate from one extremity of the world to the other; though we have the testimony of most voyagers that Seals are very rarely found between the equatorial line and 21° north latitude.

The Seals of the Southern hemisphere have not been so well studied, from the want of sufficient materials. Cuvier, when he wrote the 'Ossemens Fossiles,' possessed only eight skulls, belonging to four species (viz. 1. *Phoca leptonyx*; 2. *P. elephantina*; 3. *P. pusilla*; 4. *P. leonina*?); but as several of these had been brought home without the skins, he could only refer them doubtfully to established species. Indeed, almost the only knowledge that we have of these animals is derived from the observations of Cook, and the Forsters, who accompanied that

intrepid navigator as naturalists; and the materials which they brought home were well collated together by Pennant, in his 'History of Quadrupeds,' a work of very extraordinary merit considering the date of its publication. England might then fairly be described as taking, as she should do, a lead in scientific Zoology: this period has not been fairly estimated by the modern school of Zoologists, who, at the opening of the Continent after the war, appear to have been so dazzled by the brilliant progress made by the Professors named by Napoleon, that they overlooked the fact that these men were only following in the footsteps of Pennant, Latham, Solander, the Forsters, Fabricius, and others, who were either natives of, or had been fostered by, the scientific men of this country, as Linnæus followed in the footsteps of Ray.

Besides the particulars given by Cook and Forster in the account of their voyages, Forster communicated to Buffon the figures of two of the species he had observed, accompanied by details of their organization and habits, which were printed in the supplementary volumes of Buffon's Natural History, and form the most complete and best account we have yet had of the history of these species.

Peron and Lesueur, in their record of Baudin's Voyage, indicated some Seals found in the South Sea, and give fuller details of the Sea-Elephant, they having been so fortunate as to fall in with some males of that species; but the Natural History of the voyage was never published, so that we are indebted to Cuvier (Oss. Foss.) for the description of the only Seal they brought home, which appears to have been the Fur Seal of commerce.

In the Zoology of Captain Duperrey's 'Voyage of the Coquille,' a Seal is figured, under the name of *Phoca Molossina*; but the skull and skin, now in the Paris Museum, as Nilsson has correctly observed, is only the young Sea-Lion's. In the 'Voyage of the Astrolabe' two other southern Seals are figured; one called *Otaria cinerea*, Peron, which appears to be the Fur Seal of commerce, and the *Otaria australis*, which is very like my *Arctocephalus lobatus*, described from a skull in Mr. Brookes's collection many years previously. It is to be regretted, that the figures here referred to, especially of the skull, are so bad as to be utterly useless for the determination of the species without comparison of the original specimens.

In the French 'Voyage to the South Pole,' now in course of publication, figures are given of the Sea-Leopard and the common White Antarctic Seal, which they name *Phoca carcinophaga*, the two most common species found everywhere in these regions on the packed ice.

Mr. W. Hamilton has given an account of the Seals and other marine Mammalia, in Sir W. Jardine's 'Naturalists' Li-

brary,' which contains a carefully compiled account of these animals, and some original figures from the specimens in the Edinburgh and Liverpool Museums: but unfortunately, Mr. Stewart, the draughtsman, has been more intent on giving them an artistic effect than on attending to their zoological characters. Thus, some which should have no claws on their hind-feet, have large ones, and sometimes one too many for any beast; and the toe-membranes of all the Eared Seals or Otaries are represented as hairy instead of bald. The same author has given an account of the Fur Seal in the 'Annals of Natural History,' which he considers as different from the Sea Bear of Forster and other South-Sea navigators: according to Dr. Hooker, the Fur Seals rarely exceed $3\frac{1}{2}$ or 4 feet in length.

Seamen have long divided the Seals, on account of the great difference in their form, into the Earless and Eared Seals. Buffon adopted the division; and Peron, in his account of Baudin's voyage (ii. 37), gave the name of *Otaria* to the Eared Seals. Cuvier and most naturalists have adopted this name.

In the 'Medical Repository' for 1821, p. 302, I considered the Seals as forming an Order named *Amphibia*, containing two families: *Phocadæ* for *Phoca* and *Otaria*, and *Trichecidæ* for *Trichecus*.

Dr. Fleming, in 1822, placed the Otters (*Lutra*), Sea Otters (*Enhydra*), the Seals (*Phoca*), Ursine Seals (*Otaria*), and Walrus (*Trichecus*), in a single group which he called *Palmata*.—*Phil. Zool.* ii. 187.

In the 'Annals of Philosophy' for 1825, I considered the genera *Phoca* and *Trichecus* as each forming a family, and proposed to divide the Seals thus:—I. Grinders many-rooted; ears none; nose simple.—1. *Stenorhynchina*, Pelagios and Stenorhynchus. 2. *Phocina*, Phoca.—II. Grinders with simple roots, or with divided roots, and with distinct ears. 3. *Enhydrina*, Enhydra. 4. *Otariina*, Otaria and Platyrhynchus. 5. *Stemmatopina*, Stemmatopus and Macrorhinus.

M. F. Cuvier, in 1825, in the *Dents des Mammifères*, 118, divides the Seals into those which have many roots to the grinders, including *P. velutina*, *P. leptonyx*, and *P. mitrata*, and those with simple-rooted grinders, as *P. ursina* and *P. proboscidea*. In 1829, in the article Zoologie in the *Dict. Sci. Nat.* lix. 367, he divides them into—1. *Les Phoques* proprement dit, including the genera *Callocephalus*, *Stenorhynchus*, *Pelagius*, *Stemmatopus*, *Macrorhinus*, *Arctocephalus* and *Platyrhynchus*, and 2. *Les Morses*, for the genus *Trichecus*. In a paper on the genus, in *Mém. Mus.* xi. 1827, 208, he proposed to divide them into the following subgenera placed in three sections:—

Sect. 1. Grinders similar, double-rooted.—1. *Callocephalus* (vitulinus); 2. *Stenorhynchus* (leptonyx); 3. *Pelagius* (monachus).

Sect. 2. Grinders simple-rooted; cutting teeth $\frac{4}{2}$.—4. *Stemmatopus* (cristatus); 5. *Macrorhinus* (proboscidalis).

Sect. 3. Grinders simple-rooted; cutting teeth $\frac{6}{4}$.—6. *Arctocephalus* (ursinus); 7. *Platyrhynchus* (leoninus). An abstract of this paper is given in *Fischer, Syn. Mam.* 230.

Mr. Joshua Brookes, in the Catalogue of his Anatomical and Zoological Museum, 80, 1828, divides the *Tetrapterygia*, or Seals, into three families: viz. 1. *Phocidæ* or *Brachiodontia*; 2. *Otariadæ*; and 3. *Tricheyhidæ* or *Campodontia*, p. 37.

Professor Nilsson, in 1837, in a monograph of the species of Seals, proposed to divide them into seven genera, distributed into two sections thus:—

Sect. I.—1. *Stenorhynchus* (leptonyx); 2. *Pelagius* (monachus); 3. *Phoca* (vitulina).

Sect. II.—4. *Halichœrus* (grypus); 5. *Trichecus* (rosmarus); 6. *Cystophora* (proboscidea and cristata); 7. *Otaria* (jubata and ursina).

See *Vetensk. Acad. Handl.* 1837, 235; *Scand. Fauna*, no. 20, 1840. This essay is translated into German by Dr. Peters in *Wiegmann Arch.* vii. 301.

In the 'Zoology of the Erebus and Terror' there is a revision of this arrangement, which is followed in this Catalogue.

Mr. Turner, in 1848, proposed the following arrangement of the family *Phocidæ* from the study of the skulls:—

1. *Arctocephalina*: 1. Otaria; 2. Arctocephalus. 2. *Trichecina*: 3. Trichecus. 3. *Phocina*: 4. Morunga; 5. Cystophora; 6. Halichærus; 7. Ommatophora; 8. Lobodon; 9. Leptonyx; 10. Stenorhynchus; 11. Phoca.—*Proc. Zool. Soc.* 1848, 88.

Synopsis of the Tribes and Genera.

A. *Grinders two-rooted; ears none; toes simple, of fore-feet short, of hind-feet unequal, the outer of each side longest, the middle shortest; the palms and soles hairy.*

a. *Cutting teeth* $\frac{4}{4}$; *hind-feet nearly clawless; muffle hairy on the edge and between the nostrils; fore-feet triangular; wrist very short.* Stenorhynchina.

* *First, second and third front upper and the first front lower grinders single-rooted, the rest two-rooted.*

1. Lobodon. Skull and muzzle elongate; grinders unequally lobed.

** *The front grinders of each jaw single-rooted, the rest two-rooted.*

2. Stenorhynchus. Skull elongated; muzzle elongate; grinders compressed, with three cylindrical elongated lobes, the centre one longest and largest.

3. Leptonyx. Skull broad, depressed behind; muzzle short, broad; grinders subcompressed, with a small subcentral conical tubercle and a very small posterior one; the lower jaw narrow behind, without any hinder angle; fore-feet clawed.

4. Monachus. Skull broad, depressed behind; muzzle short, broad; orbits large; grinders small, conical, thick, with a small anterior and posterior lobe; lower jaw broad, with a distinct posterior angle; upper cutting teeth transversely notched.

5. Ommatophoca. Skull broad, depressed behind; muzzle very short, broad; orbits very large; grinders small, compressed, with a central incurved lobe and a small lobe on each side of it; fore-feet very slightly clawed.

b. Cutting teeth $\frac{2}{4}$; the first grinder in each jaw single-rooted, rest two-rooted; muzzle bald, and callous between and above the nostrils, and divided by a central groove; wrist rather exserted; fingers subequal; claws five, large. Phocina.

6. Callocephalus. Muzzle rather narrow; whiskers waved; palate angularly notched behind; toes gradually shorter; web between the hind-toes hairy; hair cylindrical; under-fur thin.

7. Pagophilus. Muzzle rather produced; whiskers waved; palate truncated behind; toes gradually shorter; web between hind-toes baldish; hair dry, flat, close-pressed, without any under-fur.

8. Phoca. Muzzle broad, short; forehead convex; whiskers smooth, simple; palate rather angularly notched behind; ear-hole large; fingers unequal, the third longest, second and fourth long, the first and fifth shorter, nearly equal.

B. *Grinders with single root (except the two hinder grinders of* Halichœrus).

c. Ears without any conch; toes simple, of fore-feet exserted, of hind-feet large, the inner and outer ones large and long, the three middle ones shorter; palm and soles hairy, sometimes chaffy and callous from wear; muffle hairy to the edge and between the nostrils.

* *Muzzle large, truncated, simple; canines large; grinders lobed, when old truncated.* Trichechina.

9. Halichœrus. Muzzle broad, rounded; cutting teeth $\frac{6}{4}$; grinders $\frac{5\cdot5}{5\cdot5}$, conical, the two hinder of the upper and hinder one of the lower jaw double-rooted, rest simple; canines moderate; whiskers crenulated; muffle hairy; palm and soles hairy; claws 5·5, elongate.

10. Trichechus. Muzzle very broad, truncated, swollen and convex above; muffle, palm and soles chaffy, callous, with the hair more or less worn off in the adult (hairy when young?); cutting teeth $\frac{4}{2}$ in youth, $\frac{2}{0}$ in adult; grinders 4·4, truncated, all single-rooted; canines of upper jaw very large, exserted.

** *Muzzle of the male with a dilatile appendage; cutting teeth* $\frac{4}{2}$; *grinders with a large swollen root, and a small, compressed, simple, plaited crown; muffle hairy.* Cystophorina.

11. Morunga. Nose transversely wrinkled above, exsertile; muzzle of the skull broad, truncated in front; forehead convex; hinder palatine bone short, transverse; hair flat, truncated, close-pressed; whiskers round, rather waved, thick; front claws obsolete; crown of grinders finely plaited.

12. Cystophora. Nose of male with a large compressed hood extending to the back of the head; muzzle very broad, hairy; nostrils large; muzzle of skull broad, narrowed on each side in front; forehead flat; palatine bone broad, square; hair elongate, cylindrical; whiskers flat, waved; claws 5·5, distinct; crown of grinders strongly wrinkled.

d. Ears with a subcylindrical distinct external conch; toes of the hind-feet subequal, short, with long membranaceous flaps at the end; fore-feet fin-like; palm and soles bald, longitudinally grooved; nose simple, with a rather large callous muffle above and between the nostrils; cutting teeth $\frac{6}{4}$, *upper often bifid; grinders* $\frac{6\cdot6}{6\cdot6}$. Arctocephalina.

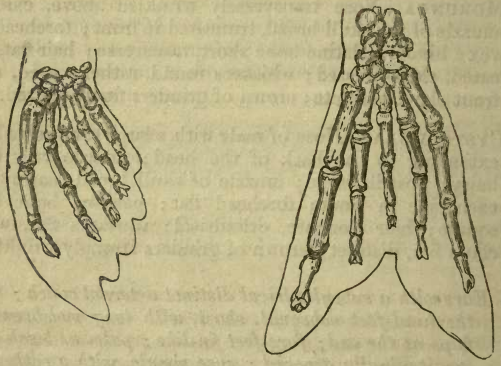
13. Arctocephalus. Cutting teeth $\frac{6}{4}$, upper subequal; muzzle rather tapering in front; whiskers cylindrical, thick, not waved; palate of the skull rather narrower behind than in front, short, scarcely reaching the middle of the zygomatic arch; lower jaw narrow, rounded below, without any angle behind.

14. Otaria. Muzzle broad, high in front; forehead rather convex; occiput high; cutting teeth $\frac{6}{4}$, upper and outer one very large, like canines; grinders of adult with very large roots, and small compressed lobed crown; palate-bone rather wider behind than in front, long, extending nearly to the articulation of the jaws behind; lower jaw broad, dilated in front and behind at the angle; the upper jaw elongate, and dilate with age.

Sect. I. *Grinders* $\frac{5\cdot5}{5\cdot5}$, *two-rooted; ears none; toes simple, of the fore-feet short, of the hind-feet unequal, the outer on each side longest, the middle shortest, the palms and soles hairy.*

The skull has no post-orbital process nor alisphenoid canal. The mastoid process is swollen, and seems to form part of the auditory bulla.—*Turner.*

Fig. 1.



Monachus albiventer. Fore and hind feet.

Phoca, *Gray, Griffith, A. K.* v. 175, 1827.
Phoca, Sect. I., *F. Cuvier, Mém. Mus.* xi.; *Nilsson, Wiegm. Arch.* vii. 306; *Scand. Fauna,* n. xx.
Phocidæ seu Brachidontia, *J. Brookes, Cat. Mus.* 36, 1828.
Phoques dents racines multiples, *F. Cuvier, Dent. Mamm.* 116. t. 38, 1825.
Phocina, part., *Turner, Proc. Zool. Soc.* 1848, 88.

Subfamily 1. Stenorhynchina. *Cutting teeth* $\frac{4}{4}$; *hind-feet nearly clawless; muffle hairy to the edge and between the nostrils; fore-feet triangular; wrist very short.*

Stenorhynchina, *Gray, Ann. Phil.* 1825, 340; *Zool. Erebus & Terror.*

* *The first, second and third front upper, and the first front lower grinders single-rooted, the rest two-rooted.*

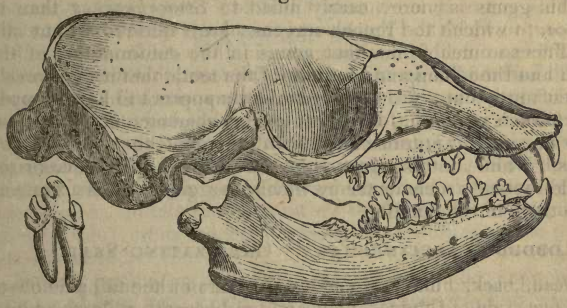
1. Lobodon.

Skull elongate; muzzle elongate; grinders rather compressed, with a large lobe in front, and three lobes behind the larger central one.

Head elongate; ear-conch none externally; muzzle broad; nostrils ovate, hairy to the edge; whiskers rigid, tapering, waved; skull elongate, rather depressed; muzzle broad, rather produced; orbits moderate: the petrose portion of the temporal bone very convex, nearly hemispherical.

Cutting teeth $\frac{4}{4}$, the upper middle ones moderate, with a smaller rather compressed crown, the two others large, conical, like the canines; the lower pair small, the two middle ones subcylindrical, rather internal, projecting forwards and rounded at the end, the outer ones rather larger, blunt; canines $\frac{1\cdot1}{1\cdot1}$, conical, curved, small, the upper largest; grinders $\frac{5\cdot5}{5\cdot5}$, with large swollen roots, the crown triangular, subtrigonal, lobed, lobes rather re-

Fig. 2.



Lobodon carcinophaga. Skull and hinder grinder.

curved at the tip, the larger lobe with one, or sometimes a second, small lobe in front, and with three lobes behind; the 1st upper

one smaller, with a single large root, the 2nd, 3rd and 4th nearly equal, and the 5th smaller and more compressed; the 2nd and 3rd have the root only divided at the base, the 4th and 5th have the roots divided nearly to the crown, and diverging; the first under is smallest and single-rooted, the rest are all similar, 2-rooted, the 3rd being the largest, and the 5th most compressed in the crown; the symphysis of the lower jaw is very long.

The teeth of the younger animals have a rather broader crown, with rather shorter tubercles, a rugose surface with some smaller tubercles on the inner side, near the base of the hinder lobes, but separated from them by a groove.

Body tapering behind. The fore limbs moderate, rather elongate, triangular, hairy above and below: toes 5, tapering, with a narrow, thick, hairy web between them; claws 5, elongate, acute, subequal: the hind limbs large, broad, triangular, hairy above and below; the outer toes on each side of the foot very large, broad, rounded at the end, the three middle ones smaller, narrow, tapering, with a thick hairy web between them, the central one smaller and shorter, all clawless: tail short, conical, depressed.

Fur close-set, rather rigid, directed backwards, soft at the end; the hairs flat at the base, tapering to a fine point, without any under-fur at the roots.

Inhab. Antarctic Ocean.

Lobodon, *Gray, Zool. Erebus & Terror, Mamm.*
Phoca, sp. *Homb. & Jacq. Voy. Pole Sud* (no description).
Stenorhynchus, part., *Owen, Ann. & Mag. N. H.* 1843, 331.
Halichœrus, sp. *T. Peale.*

This genus is more nearly allied to *Stenorhynchus* than to *Phoca*, to which the French surgeons have referred it, but still it differs so much from that genus in the conformation of the skull and the lobing and rooting of the teeth, that it can scarcely be left in it: but the latter peculiarity appears to have escaped Mr. Owen's research, for in his generic character of *Stenorhynchus* he says, "Anterior molars with one root, the rest with two roots," while in this genus the three front upper molars are single-rooted, a character by which this genus differs from all the others in the family.

1. Lobodon carcinophaga. Crab-eating Seal.

Head, back, hind feet and upper part of the tail pale olive; fore feet, side of the face, body and tail beneath yellowish white, the hinder part of sides of the body, the base of the hind fins yellow-spotted, spots unequal, often confluent: whiskers white, the upper ones smaller, dusky.

Phoca carcinophaga, *Homb. & Jacq. Voy. Pole Sud*, t. . Skull good. Not described.

Stenorhynchus serridens, *Owen, Ann. & Mag. N. H.* 1843, 331; *Proc. Zool. Soc.* 1848, 131.

Lobodon carcinophaga, *Gray, Zool. Ereb. & Terror, Mammalia*, 2. t. 1. t. 2, skull; *Cat. Osteol. Spec. B. M.* 32.

Halichœrus antarctica, *T. Peale, U. S. Explor. Exped.* 30. t. 5, skull, fig. . p. 31.

Inhab. Antarctic Ocean, on the packed ice.

a. Skull, three parts grown. Antarctic Seas. Presented by the Admiralty from the Antarctic Expedition. Skull figured *Zool. Erebus & Terror*, t. .

b. Skull. Adult. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

c. Skull. Adult. Antarctic Seas. Antarctic Expedition. Presented by Lieut. W. Smith, R.N.

d. Skull. Adult. Antarctic Seas. Antarctic Expedition. Presented by Lieut. W. Smith, R.N.

e. Skull. Adult. Antarctic Seas. Antarctic Expedition. Presented by Lieut. W. Smith, R.N.—See Fig. 2. p. 9.

f. Skull. Young. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

g. Skeleton. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

h. Skull. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

** *The first front grinder in each jaw single-rooted, the rest two-rooted.*

2. Stenorhynchus.

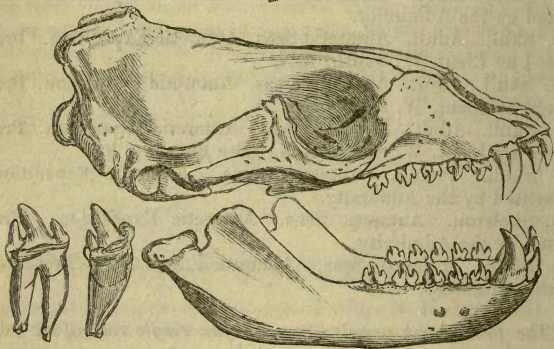
Skull elongate; muzzle elongate; grinders compressed, with three cylindrical elongate lobes, the centre one longest and largest.

Head elongate; ear-conch none externally; muzzle broad, elongate; muffle hairy to the edge and between the nostrils; nostrils acute; whiskers slightly waved; face elongate, rather compressed; muzzle tapering, rather produced and compressed on each side; orbits moderate; the petrose portion of the temporal bone rather convex.

Cutting teeth $\frac{4}{4}$, conical, acute, incurved, granular, and with a cutting edge on each side in a regular row, the two outer larger, the upper much larger than the lower, and separated from the canines by a broad space; canines conical, with sharp cutting edges within and on the sides, the upper largest: grinders $\frac{5\cdot5}{5\cdot5}$,

with moderate roots, separated from the crown by a narrow groove, the crown compressed, divided into three elongate lobes, the centre lobe much the largest, longest, and subcylindrical, the anterior and posterior lobes conical; the bases of the lobes are surrounded by a sharp-edged ridge, with two small, short, conical tubercles on the inner side, the larger one being at the base of the separation of the hinder from the middle lobe: the front grinder in each jaw is rather the thickest, with a single thick conical root; all the rest have two rather diverging roots, divided nearly to the crown; the hinder tooth in each jaw is rather the smallest. Symphysis of the lower jaw short.

Fig. 3.



Stenorhynchus Leptonyx. Skull and grinders.

Body tapering behind. The fore limbs moderate, rather elongate. The toes are rather larger than the wrist, and each furnished with a small nearly terminal claw: the hind limbs are rather large, of two nearly equal lobes, destitute of any claws: the three middle toes small, tapering.

The fur close-set, short, without any under-fur; hairs flattened, tapering at the tip to a point.

In the young skull the grinders are well-developed, while the cutting teeth are small and far apart: the hinder grinders have four lobes, where they have only three in the adult.

Mr. MacMurtrie, in his translations of Cuvier, erroneously adds to the generic character in the text of the author, "but with single roots;" this is repeated in the reprint of the American edition published by Orr, i. 98.

Dr. Knox observes, "Teeth, $\frac{4}{4}-\frac{2}{2}-\frac{10}{10}=32$: the two lower

middle incisors peculiar. Vertebræ:—cranial, 4; cervical, 7; dorsal, 14; lumbar, 6; sacral, 3; coccygeal, 13=47.

"The nostrils opened much after the manner of the Cetacea, in the form of elongated fissures, 1 inch from the extremity of the snout; the pelvic extremities very large and far back; tail extremely short. The skin was hairy. The stomach contained numerous fish-bones, a few feathers (gulls'), and some considerable portions of a pale green, broad-leaved, marine Fucus: thousands of a small, hard, round, white worm (parasitical) pervaded all parts of the intestines. The intestinal tube measured 71 feet 10 inches: caput cæcum, 1 inch 9 lines: diameter of small intestines, 1 inch; of large intestines, 1 inch 6 lines. Liver weighed 14 lbs.; kidneys, 2 lbs. each; spleen, 1 lb.; heart, 6 lbs. The arch of the aorta gave off an extremely short *innominata*, which divided it into a right carotid and subclavian, and left carotid; the left subclavian came off separately: it resembles Tiedemann's third variety, pl. 3 (copy published in Edinburgh)."

Stenorhynchus (Stenorhynque), *F. Cuv. Dict. Hist. Nat.* xxxix.; *Mem. Mus.* xi. 190; *Dict. Sci. Nat.* lix. 463 (1829); *Nilsson, Wiegmann Arch.* vii. 307; *Scand. Fauna*; *Gray, Zool. Ereb. & Terror, Mamm.*

Phoca, sp. *Home, Blainville, F. Cuv. Dent. Mamm.* t.

Inhab. Antarctic Ocean.

1. Stenorhynchus Leptonyx. Sea Leopard.

Grey, paler beneath, with small black spots on the sides of the neck and body, and with a few smaller white spots on the sides; upper part of the hinder limbs dark, pale-marbled.

Phoca Leptonyx, *Blainv. Journ. Phys.* xci. 288, 1820; *Desm. Mamm.* 247, *from Home's specimen*; *Cuv. Oss. Foss.* v. 208. t. 18. f. 2; *Gray, Griffith, A. K.* v. 178; *Blainv. Ostéogr. Phoca*, t. 1 & t. 4. f. , skull (Mus. Paris); *F. Cuvier, Dent. Mamm.* 118. t. 38 A.

Seal from New Georgia, *Home, Phil. Trans.* 1822, 240. t. 29, skull.

Phoque quatrième, *Blainv. in Desm. Mamm.* 243, *note*; see *Cuv. Oss. Foss.* v. 207.

Stenorhynchus Leptonyx, *F. Cuv. Dict. Sc. N.* xxxix. 549. t. 44; *F. Cuv. Mém. Mus.* xi. 190. t. 13. f. 1; *Dent. Mamm.* 118. t. 38 A; *Nilsson, Wiegm. Arch.* vii. 307; *Scand. Fauna*, t. ; *Gray, Zool. Erebus & Terror, Mamm.* t. 3, animal, t. 4, skull; *Cat. Osteol. Spec. B. M.* 31; *Blainv. Ostéogr. Phoca*, t. 5. f. 9, teeth and skull.

Phoca Homei, *Lesson, Dict. Class. H. N.* xiii. 417.

The Small-nailed Seal, *Hamilton, Nat. Lib.* 180. t. 11 (nails too large).
Stenorhynchus aux Petits Ongles, *Hombr. & Jacq. Voy. à Pole Sud*, t. 9.
Sea Leopard *of the Whalers.*
Sea Bear of New Zealand, *Knox in Letter.*
Phoca ursina, or Sea Bear, *Pollach, N. Zealand.*
Inhab. Antarctic Ocean, on the packed ice.

a. Skin. Adult. Stuffed. Antarctic Ocean. Presented by the Lords of the Admiralty from the Antarctic Expedition.
b. Skin. Adult. Unstuffed.
c. Skull.
d. Skull. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.
Skull figured *Zool. Erebus & Terror*, t. . f. .
e. Skull. Presented by the Admiralty.
f. Skeleton. Port Nicholson, New Zealand. Presented by Dr. Frederick Knox.
g. Skull. Antarctic Seas. Presented by the Admiralty.
h. Skull and bones of the body. Antarctic Seas. Presented by the Admiralty.
i. Skull. Antarctic Seas.

Mr. Owen (Ann. N. H. 1843, 331) appears to think that this animal is one-coloured, for he says the Sea Leopard is distinguished from it "by the spotted hide."

3. Leptonyx.

Skull broad, depressed behind; muzzle short, broad; grinders subcompressed, with a small, subcentral, conical tubercle, and a very small posterior one; the lower jaw narrow behind, without any hinder angle; fore-feet clawed.

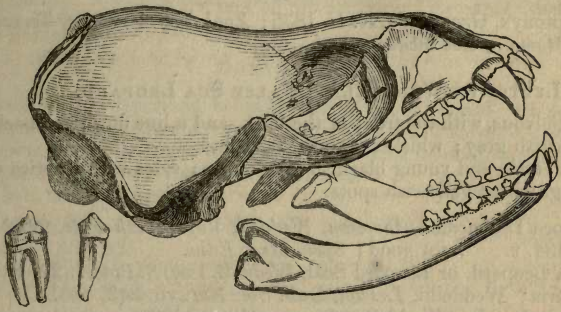
Head flattened; muzzle broad, rather short, rounded; muffle hairy between and to the edge of the nostrils; nostrils ovate; whiskers compressed, slightly waved; ears, no external conch.

Skull slightly depressed, expanded behind; muzzle rather short, broad, high above; orbits rather large: the petrose portion of the temporal bone convex, hemispherical.

Cutting teeth $\frac{4}{4}$, conical, rather recurved, those of the upper jaw largest; the middle in each jaw smaller; the outer upper much larger. Canines $\frac{1\cdot1}{1\cdot1}$, large, conical, curved, rather compressed, upper largest. Grinders $\frac{5\cdot5}{5\cdot5}$, moderate, rather far apart, parallel to the edge of the jaw, compressed, with subcentral, conical, prominent tubercle; the second, third and fourth, in the more perfect specimens, with a small conical tubercle on the

hinder edge, and a sharp-edged ridge round the inner side of the base. The front grinder in each jaw smaller, and with a single conical root, the rest all 2-rooted nearly to the crown. Lower jaw slender, with a short symphysis in front, and narrow, without any angle at the hinder part of the lower edge.

Fig. 4.



Leptonyx Weddellii. Skull and first and last grinder.

Fore feet small, elongate, triangular, hairy above and below, with five graduated, distant, marginal claws; hind feet moderate; the two marginal toes largest, rounded at the end; claws small, rudimentary, two middle largest.

Fur short, adpressed, without any under-fur; hair slender, tapering, slightly flattened.

The skull of this genus resembles in many respects Cuvier's figure of a skull of *Phoca bicolor*; but it differs from it in all the grinders being placed more longitudinally, and in the lower jaw being slender, and without any angle on the hinder part of the lower edge. It is far more nearly allied to that genus than *Stenorhynchus*, to which Mr. Owen (Ann. N. H. 1843, 331, 332) has referred it; observing that his *Sten. serridens* (our *Lobodon cancrivora*) shows modifications of the molar teeth which would give it a better claim to subgeneric distinction than the *Sten. Weddellii* (which he observed is the type of the subgenus *Leptonyx* of Mr. Gray) has been supposed to possess.

Mr. Owen made this remark, and drew up his specific character, without having seen the teeth; for the skull was not then removed from the skin, and the specimens in the British Museum were stuffed with their mouth nearly closed.

This animal is easily known from *Stenorhynchus* by the shortness of the wrist, and the triangular form of the fore feet, being

intermediate in this respect between that genus and *Ommatophoca*.

Mr. Swainson, in 1832, applied the name of *Leptonyx* to a genus of birds; and in 1837, the same name to a second: but the former had before been named *Pteroptychos*, and the latter *Coryphospiza*, so that the name may still be used for the Seal.

Inhab. Antarctic Ocean.

Leptonyx, *Gray, Mag. N. H.* 1836; *Zool. Voy. Erebus & Terror, Mamm.*; not *Swainson*.

1. Leptonyx Weddellii. False Sea Leopard.

Fulvous, with the front of the back, and a line down the back, blackish grey; whiskers brown, tapering.

Female and young blackish grey above; sides with a series of longitudinal yellowish spots.

Phoca Leopardina, *Jameson, Weddell, Voy. South Pole*, 22, 24, 134. t. , not good; *Spec. Mus. Edin.*
Sea Leopard, or Leopard Seal, *Weddell, Voy. S. Pole*, i. 22, 134.
Otaria? Weddellii, *Lesson, Bull. Sci. Nat.* vii. 343, 438.
Stenorhynchus Weddellii, *Lesson, Mamm.* 200.
Leopard Seal, *Hamilton, Nat. Lib.* 183. t. 12 (*from Capt. Weddell's specimen*).
Leptonyx Weddellii, *Gray, Mag. N. Hist.* 1836; *Zool. Voy. Erebus & Terror*, t. 5, animal, t. 6, skull.
Inhab. Antarctic Ocean. South Orkney, *Weddell.*

a, b. Skin. Adult. Stuffed. Santa Cruz. Capt. Fitzroy, R.N., 1833.

The specimens described as Leptonyx Weddellii, *Gray, Mag. N. H.* 1836; *Cat. Osteol. Spec. B. M.* 31.

N. B. When this species was first described, I thought it was the *Leopard Seal* of Weddell. I was afterwards induced to believe that I was mistaken, as the name *Sea Leopard* was applied by the Whalers to *Stenorhynchus Leptonyx*; but it would appear that they used the same name for the two Seals, for I have convinced myself, by examining the teeth of Weddell's specimen in the Museum of the University of Edinburgh, that my first opinion was correct.

c. Skin. Stuffed. Small. Antarctic Sea. Presented by the Lords of the Admiralty, from the 'Zool. of the Erebus and Terror.' Specimen described and figured in 'Zool. Erebus and Terror.'

d. Skull. River Santa Cruz, East coast of Patagonia. Presented by Capt. Fitzroy.

Skull of specimen.

e. Skull. River Santa Cruz, East coast of Patagonia. Presented by Capt. Fitzroy.

Skull of specimen.

f. Skull. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

The skull figured 'Zool. Erebus and Terror,' t. .

g. Skull. Antarctic Seas. Antarctic Expedition. Presented by the Admiralty.

4. Monachus.

Skull broad, depressed behind; muzzle short, broad, orbits large; grinders small, conical, "thick, with a small anterior and posterior lobe;" lower jaw broad, with a distinct posterior angle; "upper cutting teeth transversely notched."

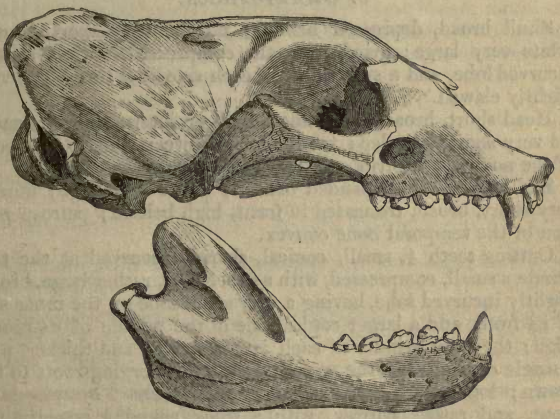
Inhab. Mediterranean.

Monachus, *Fleming, Phil. Zool.* ii. 187, 1822; *Nilsson, Vet. Akad. Hand.* 1837, 235.

Pelagios (Pelage), *F. Cuv. Mém. Mus.* xi. 193, 196. t. 13, 1827; *Gray, Zool. Erebus & Terror, Mamm.* 3.

Pelagius, *F. Cuv. Dict. Sci. Nat.* lix. 463, 1829; *Fischer, Syn. Mamm.* 230; *Wiegmann, Arch.* vii. 308; *Nilsson, Vet. Akad. Handl.* 1837, 235; *Scand. Fauna*, xx. t.

Fig. 5.



Monachus albiventer. Skull. From *Cuvier, Oss. Foss.*

1. MONACHUS ALBIVENTER. MONK SEAL.

Phoque à ventre blanc, *Buffon, H. N. Supp.* vi. t. 44; *Cuv. R. A.* i. 166; *Oss. Foss.* v. 208. t. 17. f. 1, skeleton, f. 2, 345, skull; *Lobstein, Obs. Anat. Comp. Rangani, Opusc. Scient.*
Phoca Monachus, *Herm. Berl. Abh.* iv. t. 12, 13; *Desm. Mamm.* 241.
Phoca Hermanni, *Lesson, Dict. Class. H. N.* xiii.
Pelagios Monachus, *F. Cuv. Dict. Sci. Nat.* xxxix. 550; *Ann. Mus.* xx.; *Mém. Mus.* xi. 193. t. 13, skull; *Blainv. Ostéog. Phoca*, t. 5, 7, 8, 9.
Pelagius Monachus, *Nilsson, Scand. Fauna*; *Wiegm. Arch.* viii. 309; *Gray, Zool. Erebus & Terror.*
Monachus Mediterraneus, *Nilsson, Vet. Akad. Hand.* 1837, 235.
Phoca albiventer, *Bodd. Elench.* 170.
Phoca bicolor, *Shaw, Zool.* i. 254. t. 70, 71.
Phoca leucogaster, *Peron.*
Phoca vitulina, *Wolf, Abbild.* i. 18. t. 4, good.
Phoque Moine, *F. Cuv. Ann. Mus.* xx. 387.
? Phoca Isodorei, *Lesson, Rev. Zool.* 1843, 256; *Echo Monde Savantes,* 1843, 228 (*from Isle D'Oleron*).
Pied Seal, *Penn. Quad.* ii. 173.
Mediterranean Seal, *Shaw, Zool.* i. 255.
Inhab. Mediterranean.

5. OMMATOPHOCA.

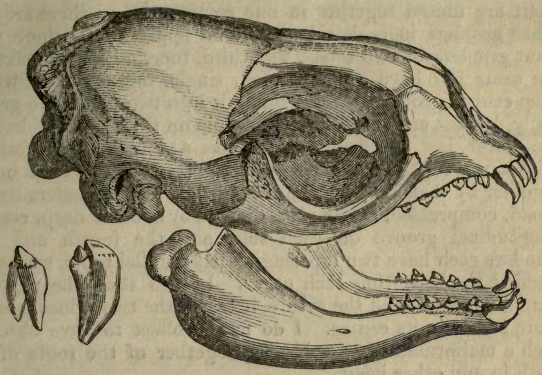
Skull broad, depressed behind; muzzle very short, broad; orbits very large; grinders small, compressed, with a central incurved lobe, and a small lobe on each side of it; fore-feet very slightly clawed.

Head short, broad; ears small, with no internal conch; muzzle very short, rounded; muffle hairy between and to the edge of the nostrils; nostrils ovate; whiskers tapering, conical.

Skull depressed, expanded behind; orbits very large; muzzle very short, broad, truncated in front, high behind; petrose portion of the temporal bone convex.

Cutting teeth $\frac{4}{4}$, small, conical, sharply recurved at the tip; grinders small, compressed, with a subcentral, rather large, broad, slightly incurved lobe, having a very small lobe on the inner side of its front, and a larger conical one in the middle of its hinder edge; the front grinder of each jaw is smaller and thicker, with a single conical root, the rest all with two diverging roots to the crown; lower jaw rather slender, with a short symphysis in front, and rather narrow, with a thick rounded edge in the hinder part of the lower edge in the place of the angle.

Fig. 6.



Ommatophoca Rossii. Skull and hinder grinders.

Fore-feet moderate, elongate, triangular, hairy above and below; toes 5·5, tapering, subequal, separated by a thick, narrow, hairy web; claws 2 or 3, very small, rudimentary, horny, acute; hind feet large, broad-triangular, hairy above and below; the outer toes on each side of the foot very large, broad, rounded at the end, the middle ones small, narrow, tapering, with a thick, hairy web between them; the central one smaller and shortest; all clawless; tail short, conical.

Fur very close-set, rather rigid.

Inhab. Antarctic Ocean.

Ommatophoca, *Gray, Zool. Erebus & Terror, Mamm.*
Ommatophora, *Turner, P. Zool. Soc.* 1848, 88, misprint.

1. Ommatophoca Rossii. Ross's Large-eyed Seal.

Greenish yellow, with close, oblique, yellow stripes on the side, pale beneath.

Ommatophoca Rossii, *Gray, Zool. Erebus & Terror, Mamm.* t. 7, animal, t. 8, skull and teeth; *Cat. Osteol. Spec. B. M.* 31.
Inhab. Antarctic Ocean.

a. Stuffed Skin. Antarctic Ocean. Presented by the Lords of the Admiralty, from the Antarctic Expedition.

b. Skull of *a*. Figured *Zool. Erebus & Terror*, t. 8. f. 1, 2 & 4 The first and second grinders of the upper jaws are small,

with a single conical root; and on the right side both these teeth are united together in one cavity; and as there are four other grinders in each side, it would appear as if there were front grinders of two sets. The third, fourth, fifth and sixth of the same jaw have a compressed, single, tapering root, with a deep central groove nearly dividing it into two parts, the groove being deepest and most distinguishable on their outer side. In the lower jaw the front grinder has a double crown, with a thick single root, tapering below, as if formed of two teeth united together by their roots. The second and third grinders have a broad, compressed, single root, divided by a rather deep, central, longitudinal groove on each side, and the fourth and fifth grinders each have two tapering, nearly parallel roots, well-separated at the base from each other. In this skull the palate is rounded behind, and the suture between the two bones is much more nearly in its centre. I do not recollect to have observed such a malformation, or soldering together of the roots of the teeth in any other beast.

b, *c*. Skull and skeleton.

The skull has the first upper and lower grinder with a single large subcylindrical root, tapering to a point beneath, and each of the other grinders has two conical separate roots diverging nearly from the collar. The palate is broad and rather truncated behind, and the transverse suture between the two bones in the palate is rather more than two-thirds the distance from the inner edge of the cutting teeth.

d. Skull. Figured *Zool. Erebus & Terror*, t. 8. f. 3, 5. Antarctic Ocean. Presented by the Lords of the Admiralty.

These skulls differ considerably from one another in the form of the palate and in the teeth; but it is probable that the teeth of the skull (*b*) belonging to the skin (*Zool. Ereb. & Terror*, t. 8. f. 1, 2, 4) is a malformation.

Subfamily 2. Phocina. *Cutting teeth* $\frac{6}{4}$; *the first front grinder in each jaw single-rooted, rest two-rooted; muffle bald and callous between and above the nostrils, and divided by a central groove; wrist rather exserted; fingers subequal; claws* 5·5, *large.*

Phocina, *Gray, Ann. Phil.* 1825, 340; *Zool. Erebus & Terror*, 3.
Phocacèerna, § 1, *Nilsson, Vet. Akad. Hand.* 1837; *Wiegm. Arch.* vii.; *Scand. Fauna*, t. , 1840.
Phoca, *Nilsson, Vet. Akad. Hand.* 1837; *Wiegm. Arch.* vii.; *Scand. Fauna*, xx. 1840.
Callocephalus, *F. Cuv. Mém. Mus.* xi. 1827.

6. Callocephalus.

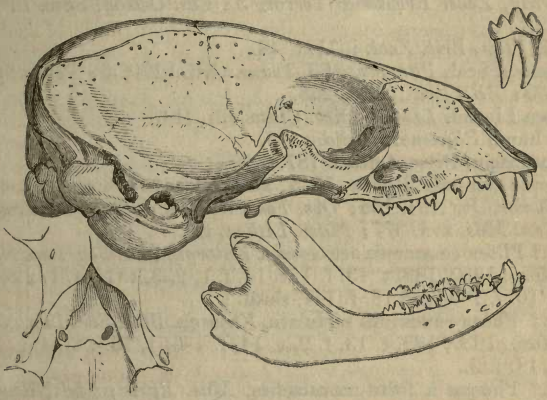
Muzzle rather narrow; whiskers waved: fingers gradually shorter. Palate angularly notched behind; hair subcylindrical, under-fur thin; web between the hind toes hairy.

Inhab. Northern Ocean.

Callocephalus (Callocephale), part., *F. Cuv. Mém. Mus.* xi. 182, 1827; *Dict. Sci. Nat.* lix. 463, 1829; *Fischer, Syn.* 230; *Gray, Zool. Erebus & Terror, Mamm.*

Phoca, sp., *Linn.*; *Fleming, Phil. Zool.* ii. 187; *Nilsson, Scand. Fauna*, xx.

Fig. 7.



Callocephalus vitulinus. Skull, grinder and palate.

* *Lower jaw short, branches rounded beneath, and diverging from the front.*

1. Callocephalus vitulinus. Common Seal.

Finely sprinkled, blackish and whitish, and with greyish brown and yellowish grey along the back, usually unspotted and blackish; the underside of the body whitish; a widish, paler, unspotted ring round each eye, and over each eye a small roundish spot, from which a bristle proceeds; edge of lower jaw rounded below in front, with a short symphysis; grinders large, rather crowded and oblique.

Phoca vitulina, *Linn.*; *Nilsson, Vet. Akad. Handl.* 1837; *Scand. Fauna*; *Wiegmann, Arch.* vii. 316; *Gray, Griffith, A. K.* v.

176; *Blainv. Osteog. Phoca*, t. 2, 5, 9; *Gaimard, Voy. Island.* t. 11. f. 1, 2, skull; *Ball, Trans. Roy. Irish Acad.* xviii. t. 4. f. 11–13, t. 5, t. 6; *Sketches Brit. Seals*, t. 8. f. 23–25, animal, t. 9. f. 26, 32, anat.

Phoca communis, *Linn. Mus. Ad. Frid.* i. 5.

Phoca canina, *Pallas, Zool. Ross. Asiat.* 114.

Phoca littorea, *Thienem. Nat. Bemerk.* 61. t. 6, 7, 8; *Bull. Sci. Nat.* v. 216.

Phoque commun, var. *F. Cuvier, Mamm. Lith.* ix. t. ; *Mém. Mus.* xi. 182. t. 12. f. 1 *a*, *b*, *c*.

Phoca variegata, *Nilsson, Scand. Fauna*, i. 359.

Callocephalus vitulinus, *F. Cuvier, Dict. Sci. Nat.* xxxix. 540; *Gray, Zool. Erebus & Terror*, 3; *Cat. Osteog. Spec. B. M.* 32.

Seal, *Penn. Brit. Zool.* i. 71. t. 48.

Common Seal, *Parsons, Phil. Trans.* xlvii. 120. t. 6; *Penn. Syn.* 339; *Bell, Brit. Quad.* 263.

Phoca Linnæi, *Lesson, Dict. Class.* xiii. 414.

See hund, *Blumenb. Abbild.* t. 73.

Veau marin, *Perr. Anim.* i. 187. t. 97.

Phoque commun, *Buffon, H. N.* xiii. 333. t. 45; *Suppl.* vi. t. 46; *Cuvier, R. A.* i. 165; *Oss. Foss.* iv. 278, v. 200; *F. Cuvier, Ann. Mus.* xvii. 377; *Mam. Lithog.* t. .

Var.? Phoca communis octonotata, *Kutorga, Bull. Soc. Imp. Nat. Mosq.* 1839, 189. t. 13. f. 1, t. 14. f. 1, 2, 3, t. 15. f. 1, 2 & 5, t. 16. f. 1–4, and 18. f. 1–4, skull.

Var.? Phoca communis undulata, *Kutorga, Bull. Soc. Imp. Nat. Mosq.* 1839, 189. t. 13. f. 2, t. 14. f. 4–6, t. 15. f. 3, 4, t. 17, t. 18. f. 2.

Var.? Phoque à forte moustaches, *Mus. Paris*; fide *Nilsson, Wiegmann, Arch.* vii. 311.

Inhab. North Sea. Caspian Sea. Baikal.

a. Skin, stuffed. Belfast. Mr. W. Thompson's Collection.

b. Skin, stuffed.

c. Skin, stuffed.

d. Skull. Greenland. From Dr. Moller's Collection.

e. Skeleton: young. Coast of England. Dr. Mantell's Collection.

f. Skull. Greenland. Fig. 6. p. 21.

g. Skull.

h. Skull of specimen ( ). Coast of Europe.

i. Skeleton of specimen ( ). Coast of Holland. Presented by the Zoological Society.

j. Skeleton. Greenland. From Mr. Warwick's Collection. "Phoca hispidus or P. annulatus," *Warwick*.

2. Callocephalus hispidus. Ringed Seal.

"Grinders rather more simple than those of *C. vitulina*; skull more depressed; intermaxillaries advanced between the maxilla and the nasal for one-third their length; frontal and palatines not united in the orbits; palate angular behind."—*F. Cuvier.*

Phoca (Callocephalus) hispida, *F. Cuvier, Mém. Mus.* xi. 189. t. 12. f. 3, *g, h, i*, skull; *Gaimard, Voy. Isl. Mamm.* t. 11. f. 1, 2, skull.
Inhab. North Sea.

** *Lower jaw dilated and inflexed beneath in front.*

3. Callocephalus fœtidus. Ringed Seal.

Back blackish; on it or on its side there are largish oval, whitish, thin rings (from $1\frac{1}{2}''$ to $2''$ long); the circle round the eyes is of one colour; the hairs of the beard are thin and brown; the grinders rather far apart, and straight as regards the margin; fur short, crisp, recurved at the tip; lower jaw dilated and inflexed beneath in front.

Young greenish black (not eyed like the adult), beneath paler.

Phoca fœtida, *Müller, Zool. Dan. Prod.* viii.; *O. Fab. Fauna Græn.* 13; *Fischer, Syn.* 577; *Gray, Griffith, A. K.* v. 178.
Phoca hispida, *Fab. Scrift. Natur. Hist.*
Phoca equestris, *Pallas, Zool. Ross. Asiat.* iii. 40.
Phoca annellata, *Nilsson, Scand. Fauna*, i. 362. t. 38; *Thienem. Nat. Bemerk.* 83. t. 9–12; *Bull. Sci. Nat.* v. 261; *Wiegmann, Arch.* vii. 312; *Gaimard, Voyage Island.* t. 11. f. 7; *Ball, Sketches Brit. Seals*, t. 11. f. 36, skull.
Phoque commune, *F. Cuvier, Mam. Lithog.* iv. t. , cop. *Hamilton, Seals*, t. 4.
Callocephalus discolor, *F. Cuvier, Dict. Sci. Nat.* xxxix. 545; *Mém. Mus.* xi. 186.
Phoca discolor, *Gray, Griffith, A. K.* v. 177.
Phoca Frederici, *Lesson, Dict. Class. H. N.* xiii. 416.
? Phoca Schreberi, *Lesson, Dict. Class. H. N.* xiii. 414 part.
Phoca hispida (part.), *Erxl. Syst.* 589.
Callocephalus hispidus (part.), *F. Cuv. D. S. Nat.* xxxix. 547.
Callocephalus annellatus, *Rüppell, Verz.* 167; *Gray, Z. E. & T.* 3.
? Ribbon Seal, *Penn. Arct. Zool.* i. 165.
Inhab. North Sea. England, *Nilsson.*

a. Skin (stuffed).
b. Specimen stuffed. North Sea.
c. Skull of specimen *b.*
d. Specimen stuffed. North Sea.
e. Skull of specimen *d.*

**** Lower jaw not observed.*

4. Callocephalus Caspicus. Caspian Seal.

Back and sides grey-brown, decorated with irregular, thickish, yellowish rings; the sides of the mouth gradually of a pale yellowish; hairs of the beard thick, pale. Length 4 feet.

Phoca Caspica, *Nilsson, Vetensk. Akad. Hand.* 1837; *Scand. Fauna*; *Wiegmann, Arch.* vii. 313.
Phoca canina, var. Caspica, *Pallas, Zool. Ross. Asiat.*
Phoca vitulina β. Caspia, *Gmelin, S. N.*; *Fischer, Syn.* 675; *Gray, Griffith, A. K.* v. 173.
Callocephalus Caspicus, *Gray, Zool. E. & T.* 3.
Inhab. Caspian Sea.

5. Callocephalus dimidiatus. Norway Seal.

Whiskers waved, dark grey above, lips and beneath pure white.

Phoca dimidiata, *Schlegel, Mus. Leyden.*
Inhab. Norway. Mus. Leyden.

May be only a particular state of one of the preceding species.

6. Callocephalus Largha. Largha Seal.

Muffle bald, narrow, with a central groove; whiskers compressed, waved; shining ashy white, with numerous scattered, small, oval black spots, smaller and closer on the back; feet brownish ash; claws long, black; no under-fur.

Young yellow; back dark grey, from the skin being visible through the pale hair; hair short, flattened; web baldish.

Var. Spots larger, more equally scattered (Japan).—Skull and teeth like P. oceanica, *Temm.*

Phoca Largha, *Pallas, Zool. Ross. Asiat.* i. 113.
Phoca nummularis, *Temm. Fauna Japon.* c. 3. t. .
Chien de Mer de Détroit de Behring, *Choris, Voy. Pictoresque*, t. 8.
Phoca Chorisii, *Lesson, Dict. Class. H. N.* xiii. 417; *Fischer, Syn.* 24.
Phoque tigre, *Krachenninikow, Hist. Kamtsch.*
Phoca tigrina, *Lesson, Manuel*, 550.
? Phoque de Steller, *Krachenn. Descrip. Kamtsch.* 107.
Inhab. North Pacific. Japan, *Mus. Leyden.* East Shore, Kamtschatka, *Pallas.*

7. Pagophilus.

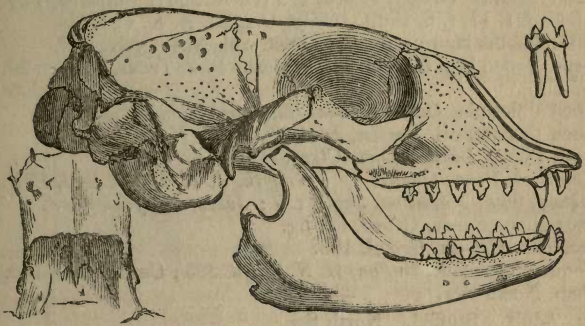
Palate truncated behind; fingers gradually shorter; muzzle rather produced; hair dry, flat, close-pressed, without any under-fur; web between the hind-toes baldish; lower jaw dilated and inflexed beneath in front, so as to close in the front part of the gullet; grinders rather distant.

Inhab. Northern Ocean.

Callocephalus §, *F. Cuvier, Mém. Mus.* xi. 1827.

Pagophilus (Subgen. of Callocephalus), *Gray, Zool. Erebus & Terror*, 3.

Fig. 8.



Pagophilus Grœnlandicus. Skull.

1. Pagophilus Grœnlandicus. Harp Seal.

Grey or whitish, with large and small black spots; hairs of the beard waved on the edges; cutting teeth diminish in size; the grinders separated, straight; edge of the mouth oblique. Length 4 to 5 feet.

Until six or seven weeks old white, called *White Coats* at Newfoundland; at one year old they have small spots; at two years old they have large spots, and the males are called *Bed Lampiers*; at three years old the males and females have the harp-shape band.—*Jukes, l. c.*

Phoca Grœnlandica, *Müller, Zool. Dan. Prod.* 8; *Fab. Fauna Grœn.* 11; *Skrivt. Nat. Selsk.* i. 87–157, ii. t. 12. f. 1, skull; *Thienemann, Nat. Bemerk.* t. 14–21; *Bull. Sci. Nat.* v. 261. t. 15 & 18, t. 19, skull; *F. Cuv. Mém. Mus.* xi. 186, t. 12. f. 2; *Nilsson, Scand. Fauna*, i. 370. t. 37, young; *Wiegm. Arch.* vii. 314; *Gray, Griffith, A. K.* ii. t. 91 ♂. t. 92; v. 177; *Ball, Sketches of British Seals*, t. 11. f. 33, 35, skull (??) *from River*

Severn, t. 12. f. 37–39, skull, *Mus. Paris*; *Volkmann, Anat. Anim.* i. t. 4. f. 1, 8.

Phoca oceanica, *Lepech. Act. Petrop.* 1777, i. 295. t. 7, 8; *Fisch. Syn.* 238; *Hamilton, Seals*, t. 7.

Callocephalus oceanicus, *Lesson, Man.* 196.

Phoca semilunaris, *Bodd. Elench.* 170.

Phoca dorsata, *Pallas, Zool. Ross. Asiat.* 112.

Phoca Mulleri, *Lesson, Dict. Class. H. N.* xiii. 412.

Callocephalus Grœnlandica, *F. Cuv. Dict. Sci. Nat.* xxxix. 546; *Mém. Mus.* xi. 186. t. 12. f. 2, *d*, *e*, *f*; *Rüppell, Verz. Senck. Samml.* 169.

Young. Phoca lagura, *Cuvier, Oss. Foss.* v. 206; *Fischer, Syn.* 238; *Blainv. Osteog. Phoca*, t. 9 (? dentition); *Gaimard, Voy. Island.* t. 11. f. 6, skull; *Gray, Griffith, A. K.* v. 177.

Callocephalus lagurus, *F. Cuv. Dict. Sci. Nat.* xxxix. 546.

Grey-bearded Seal from Orkneys, *Home, Phil. Trans.* 1822, t. 28. skull.

Phoca albicauda, *Desm. Mamm. Supp.* 541, *from Mus. Paris.*

Phoca Desmarestii, *Lesson, Dict. Class. H. N.* xiii. 416.

Phoca Pilayi, *Lesson, Dict. Class. H. N.* xiii. 416.

Harp Seal, *Penn. Quad.* ; *Griffith, A. K.* t. ; *Bell, Brit. Quad.* 269; *Hamilton, Seals*, t. 7; *Jukes, Newfoundland.*

Swart süde, *Egede, Grœnl.* 62. fig.

Attarsoak, *Crantz, Grœnl.* 163.

Phoque à croissant, *Buffon, H. N. Suppl.* 325; *Cuv. R. A.* i. 166.

Inhab. North Sea.

a. Adult. Stuffed. North Sea.
b. ——. Stuffed.
c. ——. Stuffed.
d. ——. Stuffed.
e. Skin. Mr. Brandt's Collection.
f. Skull. Greenland. Dr. Moller's Collection.
g. Ditto. Ditto. Ditto.
h. Ditto. Ditto. Ditto.
i. Ditto. Ditto. Ditto.
j. Ditto. Ditto. Ditto.
k. Skeleton. Greenland. Mr. Brandt's Collection.
l, *m*, *n*. Skulls. Greenland. Dr. Moller's Collection.
o. Skull of a young specimen. Greenland. Dr. Edw. Rüppell's Collection.

The front of the lower edge of the lower jaw of this young specimen is scarcely dilated.

8. Phoca.

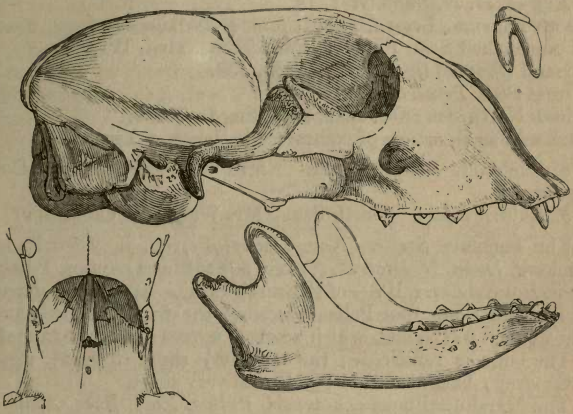
Muzzle broad, short; forehead convex; whiskers smooth, simple; ear-hole large: fingers unequal, the 3rd longest, 2nd and

4th long, the 1st and 5th shorter, nearly equal; palate with a semicircular edge behind.

Skull. Forehead arched; lower jaw with the front edge of the lower side rather dilated and inflexed; grinders small, far apart, often much worn.

Females. Teats 4.

Fig. 9.



Phoca barbata. Skull, grinder and palate.

Phoca, sp., *Linn.* &c.
Phoca, *Gray, Zool. E. & T.*
Callocephalus, sp., *F. Cuvier, Mém. Mus.* xi. 1827.

1. PHOCA BARBATA. LEPORINE SEAL.

Male. Black, belly yellowish, black dotted. *Female,* beneath grey.

Phoca barbata, *Fab. Skrivt. Nat. Selsk.* i. 139–159. t. 13. f. 3, skull; *Faun. Grœnl.* 15; *Müll. Zool. Dan. Prod.* viii.; *Nilsson, Scand. Faun.* i. 374; *Wiegm. Arch.* vii. 317; *Thienem. Nat. Bemerk.* i. t. 1, 2, 3, t. 4, skull; *Bull. Sci. Nat.* v. 261; *F. Cuv. Mém. Mus.* xi. 184. t. 12. f. 4, *k, l, m*; *Gray, Cat. Osteol. Spec. B. M.* 32; *Zool. Erebus & Terror*; *Griffith, A. K.* v. 178; *Fischer, Syn.* 240; *Blainv. Osteog. Phoca,* t. 9, dentition; ? *Temm. Fauna Japon.*

Callocephalus barbatus, *F. Cuv. Dict. Sci. Nat.* xxxix. 547; *Rüppell, Verz.* 167.

Phoca leporina, *Lepech. Act. Petrop.* i. 264. t. 8, 9; *Fab. Skriv. Natur. Selsk.* i. 164; *Fischer, Syn.* 237; *Gray, G. A. K.* v. 178.
Phoca Lepechinii, *Lesson, Dict. Class. H. N.* xiii. 415.
Callocephalus Leporinus, *F. Cuv. Dict. Sci. Nat.* xxxix. 545.
? Phoca maxima, *Steller, Nov. Comm. Petrop.* ii. 290.
Phoca albigena, *Pallas, Zool. Ross. Asiat.* 107.
Leporine Seal, *Penn. Quad.* 177.
? Sea Calf, *Parsons, Phil. Trans.* n. 469. 383. t. 1. f. 1; cop. *Buffon, H. N. Supp.* vi. t. 14.
Phoca Parsonii, *Lesson, Dict. Class. H. N.* xiii. 414.
? Long-bodied Seal, *Parsons, Phil. Trans.* xlvii. 121, cop.
? Grand Phoque, *Buffon, H. N.* xiii. 333.
? Great Seal, *Penn. Syn.* 341.
Inhab. North Sea and Japan, according to *Temm.*
Skin sold as an article of commerce in Japan.—*Temm.*

a. Skeleton. Length 8 feet. North Sea. Mr. Brandt's Collection.
b. Skin. Adult. North Sea. Mr. Warwick's Collection.

The Lachtak, *Steller, Nov. Comm. Petrop.* ii. 290=Phoca Lachtak, *Desm. N. Dict. H. N.* xxv. 588=Phoca nautica, *Pallas, Zool. Ross. Asiat.* i. 108—of Behring's Straits, have been referred to *Phoca barbata*, but Pallas describes the fingers as subequal and webbed to the end, which scarcely agrees with that animal.

The body is ventricose; the hair very short (5 lines), rigid, silver-grey; back brown lettered; tail very short.

The Maraku=Phoca ochotensis, *Pallas, Zool. Ross. Asiat.* i. 117—with soft fur and pure white when young, from the North Pacific, also requires further examination.

2. Phoca tropicalis. Jamaica Seal.

Grey-brown; hair very short, strap-shaped, closely adpressed, black with a slight grey tip; whiskers short, thick, cylindrical, regularly tapering, without any appearance of wave or twist; fingers gradually shorter.
Inhab. Jamaica.

a. Skin imperfect, without skull.
Skin referred to in description of Cystophora antillarum, *Gray, Proc. Zool. Soc.* 1849, 93.

Sect. II. *Grinders* $\frac{5\cdot5}{5\cdot5}$ *or* $\frac{6\cdot6}{5\cdot5}$ *with single root* (*except the two hinder grinders of* Halichœrus).

A. *Ears, conch none. Toes simple, of fore-feet exserted, of hind-feet large; the inner and outer ones large, long, the three middle ones smaller: palm and soles hairy* (*some-*

times chaffy and callous with wear). *Muffle hairy to the edge and between the nostrils. Grinders* $\frac{5\cdot5}{5\cdot5}$.

Phocacèerna, § 2, part., *Nilsson, Scand. Fauna*; *Wiegm. Arch.* vii. 317.
Phocina, part., *Turner, Proc. Zool. Soc.* 1848, 88.

Subfamily 3. Trichechina. *Muzzle large, truncated, simple; canines large; grinders lobed or truncated when old.*

Cetæ, part., *Gray, Ann. Phil.* 1825, 346.
Trichechina, *Gray, Zool. Erebus & Terror*, 3.
Trichecina et Phocina, part., *Turner, P. Z. S.* 1848, 88.
Trichechidæ, *Gray, Ann. Phil.* 1825, 340.
Trichehidæ seu Campodontia, *J. Brookes, Cat. Mus.* 37, 1828.
Les Morses, *F. Cuvier, Dict. Sci. Nat.* lix. 465; *Dent. Mam.* 233.

9. Halichœrus.

Muzzle broad, rounded; cutting teeth $\frac{6}{4}$, grinders $\frac{5\cdot5}{5\cdot5}$, conical, the hinder two upper and one lower double-rooted, rest simple, canines moderate; whiskers crenulated; muffle hairy, becoming baldish with age; palm and soles hairy; claws 5–5, elongate. Palate of skull with a narrow rounded notch behind; lower edge of lower jaw rounded, not dilated or inflexed in front.

Fig. 10.

Halichœrus griseus. Skull.

Halichœrus, *Nilsson, Vet. Akad. Handl.* 1837; *Scand. Fauna*, i. 377; *Wiegm. Arch.* vii. 318.
Halychœrus, *Hornschuch, Isis*, viii. 1824, 810; *Bull. Sci. Nat.* v. 104.
Phoca, sp., *O. Fab.*; *Lichtenstein.*

1. Halichœrus grypus. Grey Seal.

Halichœrus grypus, *Nilsson, Scand. Fauna*, i. 377. t. 34. f. 1, 2; *Wiegm. Arch.* vii. 318.
Phoca grypus, *Fab. Nat. Selsk. Skri.* i. 167. t. 13. f. 4, skull.
Phoca gryphus, *Licht. Berl. Acad.* 1821, t. 1. f. 1, 2; *Blainv. Ostéog. Phoca*, t. 9; *Fischer, Syn.* 239.
Phoca hispida, *Schreb. S.* 312. t. 86; *Hamilton*, t. 8.
Phoca Halichœrus, *Thienem. Nat. Bemerk.* 142.
Phoca leporina?, *Licht. in Haude und Spinersch Zeitung*, n. 46.
Phoca ochotensis, *Pallas, Zool. Ross. Asiat.* i. 117.
Halychœrus griseus, *Hornsch. Isis*, 1824, 810; *Bull. Sci. Nat.* v. 104.
Halichœrus griseus, *Nilsson, Scand. F.* 377. t. 34. f. 1, 2; *Hamilton*, t. 10.
Halichœrus gryphus, *R. Ball, Trans. Roy. Irish Acad.* xviii. t. 1, male and female, t. 2, 3, skull, teeth, &c.; *Sketches Brit. Seals*, t. 1, 2 & 7.
Grey Seal, *Bell, Brit. Quad.* 284. f.
Seal from South Sea, *Home, Phil. Tr.* 1822, t. 27, skull.
Young. Phoca Scopulicola, *Thienem. N. Bemerk.* 59. t. 5. 1824, ♂ adult; *Bull. Sci. Nat.* v. 261; *Fischer, Syn.* 237.
Phoca Thienemanni, *Lesson, Dict. Class. H. N.* xiii. 415.
Callocephalus Scopulicolus, *Lesson, Man.* 199.
Inhab. North coast of Europe (Ireland and Scotland).

a. Adult: stuffed. Coast of Northumberland.
b. Half-grown: stuffed. Fern Island. Presented by J. P. Selby, Esq.
c. Skull of *a*. Fern Island.
d. Skull of *b*. Fern Island. Presented by J. P. Selby, Esq.

10. Trichechus.

Muzzle very broad, truncate, swollen and convex above; muffle, palm and soles chaffy, callous, with the hair more or less worn off in the adult (hairy when young?). Cutting teeth $\frac{4}{2}$ in young, $\frac{2}{0}$ in adult; grinders $\frac{4\cdot4}{4\cdot4}$, truncated, all single-rooted; canines, upper very large, exserted.

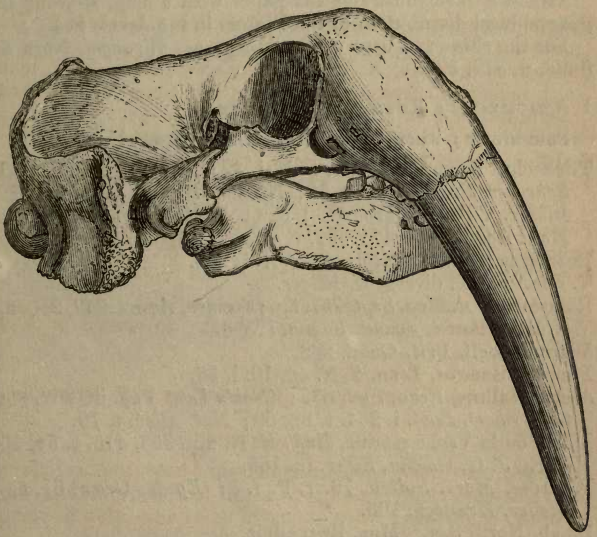
The skin is covered with small ovate scales. Nose with very rigid white compressed pellucid bristles, rounded at the end; fore-feet small, outer and hinder edge of the upper side bald, rest

covered with hair; front claw rudimentary, skin of the soles rigid, warty; hind-feet rather large, first and fifth toes elongated, with a distinct flap and rudimentary claw; three middle ones shorter, with subacute claws. Tail rudimentary.

The skull differs from the other Earless Seals in having a distinct alisphenoid canal, like the Eared Seals, and it agrees with the Earless ones in having no postorbital process and the mastoid process strong and salient, its surface continuous with the auditory bullæ.—*Turner*.

In the young "there are in the upper jaw three incisors on each side, the first or inner extremely small, the second a little larger, and the third or outer disproportionately large, being equal to the largest grinders. The canine tooth is displaced, being thrust outwards beyond the line of the other teeth. There are five grinders with single roots, the fifth very small. In the lower jaw there are five grinders. In the adult the incisors are obliterated, except the lateral pair of the upper jaw. The fifth grinder also disappears, and sometimes the fourth."—*Macgilliv. Nat. Lib.* vii.

Fig. 11.



Trichechus Rosmarus. Skull, adult.

In the very young the cutting teeth $\frac{6}{6}$, all, especially the two

upper lateral, deciduous; canines $\frac{1\cdot1}{1\cdot1}$, upper elongate, lower conical like the grinders; grinders $\frac{4\cdot4}{5\cdot5}$, small, rather compressed.—*Rapp. Bull. Sci. Nat.* xvii. 280.

Odobenus, *Brisson, Règ. Anim.* 48.
Rosmarus, *Scopoli, Introd. H. N.* 1777.
Trichechus, *Linn. Syst. Nat.* i.; *Nilsson, Vet. Akad. Handl.* 1837; *Scand. Fauna*, t. ; *Wiegm. Arch.* vii. 322; *Fleming, Phil. Zool.* ii. 187; *Rapp. Bull. Sci. Nat.* xvii. 280; *Fischer, Syn.* 678; *F. Cuvier, Dict. Sci. Nat.* lix. 465, 1829.
(Tribe) Trichecina, *Turner, Proc. Z. Soc.* 1848, 88.
Morse, *F. Cuvier, Dent. Mam.* 233. t. 95, 1825.
Trichehidæ seu Campodontia, *J. Brookes, Mus. Catal.* 37, 1828.

M. F. Cuvier thinks the Morse forms an isolated family, distinguished by the great breadth of its muzzle, the length of its upper canines, and the form of its teeth. It has the same organs of movement and intestinal canal as the Seals.—*D. S. N.* lix. 465.

Professor Baer illustrates his paper with a map, showing the geographical distribution of the Walrus in the Arctic Sea.

For the chase and uses of the Morse, see *Wrangel, Nord Siberia*, ii. 319, 320.

1. Trichechus Rosmarus. Morse.

Pale brown; when young black, when old nearly white.

Trichechus Rosmarus, *Linn. S. N.* i. 39; *Müller, Prod. Z. D.* 1; *Schreber, Saugth.* 262. t. 79; *Nilsson, Wiegm. Arch.* vii. 322; *Blainv. Osteog. Phoca*, t. 1 & 4; *Fischer, Syn.* 243; *Baer, Mem. Acad. Petersb.* iv. 97. t. 4, 1838; *Mem. Mus.* vii. t. 9.
Rosmarus arcticus, *Pallas, Z. R. A.* i. 269.
T. obesus et T. divergens, *Illiger.*
Rossmarus, *Ol. Mag. Sept.* 757. fig.; *Gesner, Aquat.* 249, 250. fig.
Walross, *Nilsson, Scand. Fauna*, i. 388.
Walruss, *Bell, Brit. Quad.* 282.
Phoca Rosmarus, *Linn. S. N.* ed. 10. i. 38.
Arctic Wallrus, *Penn. Syn.* 335; *Cook's Last Voy.* iii. 262. t. 8. fig.; *Shaw, Zool.* i. 234. t. 68, 69; *Nat. Misc.* t. 76.
Morse ou la Vache marine, *Buff. H. N.* xiii. 353, 415. t. 54, 55.
Morsch, *J. G. Gmelin, Siber.* iii. 165.
Wallross, *Mart. Spitzb.* 78. t. P. f. *b*; *Egede, Grœn.* 61. fig.; *Steller, Kamtsch.* 106.
Inhab. North Sea. Mus. Brit. adult.

a. Adult: stuffed. North Sea. Greenland?
b. Skull: adult. North Sea.
c. Skull: adult. North Sea. Presented by General Thomas Hardwicke.

d. Skull of young.
e. Tooth longitudinally divided. Presented by J. E. Gray, Esq.
f. Fœtus in spirits.
g, h, i. Three teeth. N. W. coast of America. Presented by Capt. Kellett, R.N., H.M.S. Herald.

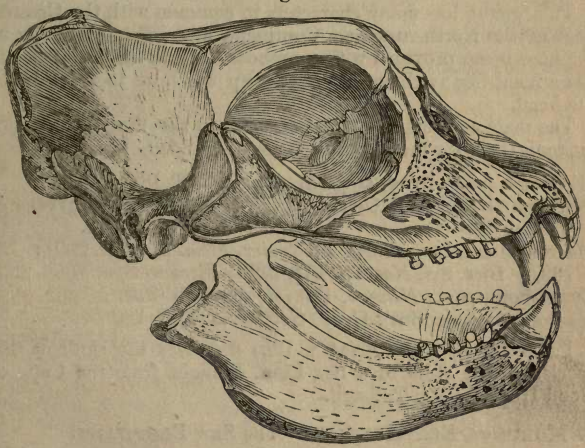
Subfamily 4. Cystophorina. *Muzzle of the males with an inflatile appendage. Cutting teeth* $\frac{4}{2}$ *; grinders with a large swollen root, and a small, compressed, simple, plaited crown. Muffle hairy.*

Stemmatopina, *Gray, Ann. Phil.* 1825, 340.
Cystophorina, *Gray, Zool. Erebus and Terror,* 3.
Cystophora, *Nilsson, Vet. Akad. Hand.*; *Scand. Fauna*; *Wiegm. Arch.* vii. 323.
Mirounga, *Gray, Griffith, A. K.* v. 179, 1827.
Phoca § 2, *F. Cuvier, Mém. Mus.* xi. 196.

11. Morunga.

Nose of the male with an elongated tubular proboscis; muzzle of the skull broad, truncated in front; forehead convex; hinder

Fig. 12.



Morunga Elephantina. Skull.

palatine bone short, transverse. Hair flat, truncated, adpressed; whiskers round, rather waved, thick. Claws, front obsolete, hinder distinct.

The head broad, short, truncated in front, with a tuft of bristles over each eye, and one on each side of the middle of the muzzle; the upper lip longer than the lower; the forehead convex; the nostrils of the male "are wrinkled, and can be blown up into a crest" (*Forster*), "with an elongate tubular proboscis" (*Peron*); of the female simple, rounded, with a hairy muffle between and around the edge of the nostrils.

Cutting teeth $\frac{4}{4}$, far apart, conical, the two middle upper smaller, the rest nearly equal; the grinders with large, swollen, subcylindrical roots, and a small, compressed, simple, plaited crown; the hinder palatine bones short, transverse.

The whiskers are very long and large, roundish, very slightly compressed, rather waved.

The fore-feet are rather small, oblong, obliquely truncated, the wrist being nearly as long as the feet, with five elongated claws, the first the smallest; the hinder feet are moderate, the marginal toes upon each side large, rounded, the three middle ones very small, tapering; all clawless. The tail conical.

Fur short, hair short, flat; broad and rounded at the tip in the adult, rather more tapering in the young; hair on the lips rather longer, more slender and slightly curled.

Inhab. the Southern Ocean.

This genus has many characters in common with the Crested Seal of the North American Continent, but differs especially in the nose being provided with a proboscis, while in that genus it has a hood-like swelling proceeding up the nose to the back of the head.

The male and female are so different in size that Lord Byron mistook them for mother and young.—*Weddell, Voy.* 84.

Mirounga, part., *Gray, Griffith, A. K.* v. 179, 1827.
Morunga, *Gray, Cat. Osteol. Spec. B. M.* 33; *Zool. Erebus & Terror.*
Macrorhinus (Macrorhine), *F. Cuvier, Mém. Mus.* xi. 200. t. 13, 1827; *Dict. Sci. Nat.* lix. 464, 1829; *Fischer, Syn. Mam.* 230.
Cystophora, part., *Nilsson, Wiegm. Arch.* vii. 324.
Macrorhyna (misprint), *Gray, Griffith, A. K.* i. 180.

Pallas (*Zool. Ross. Asiat.* i. 106) describes the skull of this species as the skull of a Sea Lion, brought from the Cape of Good Hope by Mr. Tulbagh.

1. Morunga Elephantina. The Sea Elephant.

A Sea Lion and Lioness from Juan Fernandez, *Anson, Voy. round the World* (1786), t. 122. t. 19, copied; *Pernetty, Voy. Isles Malouines,* ii. 47. t. 9*. f. 1, and altered t. 8*. f. 1;—hence

Phoca Leonina, *Linn. S. N.* i. 55; *Schreber, Saugth.* 297. t. 83 *a*.
Bottle-nosed Seal, *Shaw, Zool.* i. t. 73; *Penn. Quad.* ii. 531 (with an original description of the female).
Phoca Ansonii, *Desm. Mam.* 239, 369 (part only).
Mirounga Ansonii, *Gray, Griffith, A. K.* v. 180.
Grand Phoque à Museau ridé, *Buffon, Suppl.* vi. 316.
Anson's Sea Lion, *Forster, Voy. round the World*, ii. 527.
Phoca major, &c. n. 5. "Manate from Nicaragua," *Parsons, Phil. Trans.* 1751, 121 (female).
Phoca Elephantina, *Molina, Saggi*, 260 (1782).
L'Elephant marine, ou Phoque à trompe. Phoca proboscidea, *Peron & Lesueur, Voy. Terre Austr.* ii. 34. t. 32; *Hamilton, Seals*, t. 16, 17; *Cuvier, Oss. Foss.* v. t. 18. f. 1; *F. Cuvier, Mem. Mus.* xi. t. 14. f. 1, skull; *Dent. Mam.* 123. t. 39 *a*.
Phoca Leonina, *Blainv. Osteol. Phoque*, t. 5, 9.
Phoca proboscidea, *Hamilton, Jardine, Nat. Lib.* t. . *Mus. Liverpool.*
Cystophora proboscidea, *Nilsson, Vet. Akad. Hand.* 1837; *Scand. Fauna*; *Wiegm. Arch.* .
Mirounga proboscidea, *Gray, Griffith, A. K.* v. 180, 1827.
Morunga elephantina, *Gray, Cat. Osteol. Spec. B. M.* 33.
Leo marinus (Cap. B. S.), *Pallas, Zool. Ross. Asiat.* i. 106.
Sea Elephant, *Weddell, Voy.* 53, 84, 134.
Macrorhynus proboscideus, *Gray, in Brookes's Mus. Cat.* 36, 1828.
Phoque gris argente à os nasaux très courts, *Mus. Paris, from M. Dubison = Cuvier, Oss. Foss.* v. 213; *Nilsson, Wiegm. Arch.* vii. 325;—hence
Phoca dubia, *Fischer, Mamm.* i. 235.
Phoque des Patagons, *F. Cuvier, Mem. Mus.* i. 203. t. 14. f. 2, *d, e, f.*
Mirounga Patagonica, *Gray, Griffith, A. K.* v. 186.
Stemmatopus Patachonicus, *J. Brookes, Cat. Mam.* 36, 1828.
Inhab. Southern Ocean.

a. Skull of young. Antarctic Ocean.

b. Adult: stuffed. Antarctic Ocean. Presented by the Admiralty.

c. Skeleton of *b*. Antarctic Seas, Antarctic Expedition. Presented by the Admiralty.

Skull figured *Zool. E. & T.* t. .

d. Skin. With skull.

e. Skin of young male. Cape of Good Hope?

f. Skull. Antarctic Seas, Antarctic Expedition. Presented by the Admiralty.

g. Skull and imperfect skeleton of young. Antarctic Seas, Antarctic Expedition. Presented by the Admiralty.

h. Skeleton of specimen *e*. Cape of Good Hope. From Mr. Bartlet's Collection.

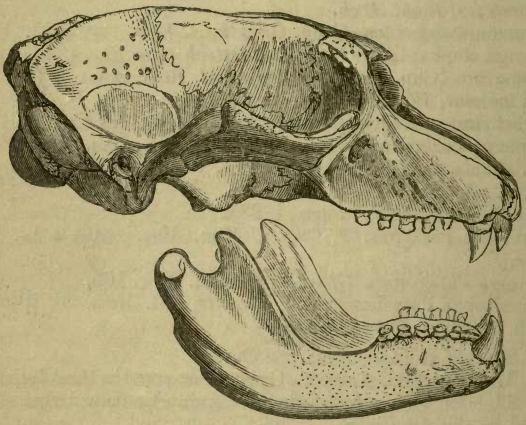
12. Cystophora.

Nose of the male with a large compressed hood, extending to the back of the head; muzzle very broad, hairy; nostrils large; muzzle of the skull broad, narrowed on each side in front; forehead flat; palatine bone broad, square; hair elongate, cylindrical; whiskers flat, waved; claws 5–5, distinct.

Cystophora, *Gray, Zool. Erebus & Terror*, 4.
Cystophora, sp., *Nilsson, Vet. Akad. Hand.* 1837; *Scand. Fauna*; *Wiegm. Arch.* vii. 326.
Mirounga, part., *Gray, Griffith, A. K.* v. 463.
Stemmatopus (Stemmatope), *F. Cuvier, Mem. Mus.* xi. 196. t. 13, 1827; *Dict. Sci. Nat.* lix. 464; *Fischer, Syn.* 230.

The young is like the young of *Pagophilus grœnlandicus* in external appearance, but it is easily known from that species by the hairiness of the muffle between the nostrils, and by the teeth

Fig. 13.



Cystophora cristata. Skull.

not being lobed, but only plaited on the surface. See also *Nilsson, Wiegm. Arch.* vii. 320.

1. Cystophora cristata. Hooded Seal.

Outer cutting teeth and the canines narrow, compressed.

Phoca cristata, *Erxl. Syst.* 590; *F. Cuv. Mem. Mus.* xi. 196. t. 13. f. 3; *Fab. Nat. Selsk. Skri.* i. 120. t. 12. f. 2; *Dekay,*

Ann. Lyc. N. Y. 1. t. 7; *Fischer, Syn. Mam.* i. 241; *Blainv. Osteog. Phoca*, t. 5, skull, t. 9, teeth; *Hamilton*, t. 14.

P. mitrata, *Milbert, MS.*; *Cuv. Oss. Foss.* v. 210. t. 18. f. 3; *F. Cuv. Dent. Mam.* 122. t. 39. t. 38 B; *Fischer, Syn. Mam.* 241; *Hamilton, Seals*, t. 13.

P. leucopla, *Thienem.* 102. t. 13 (young); *Bull. Sci. Nat.* v. 261; *Fischer, Syn.* 257, 675.

Mirounga cristata, *Gray, Griffith, A. K.* v. 463.

Cystophora cristata, *Nilsson, Vet. Akad. Hand.* 1837; *Scand. Faun.*; *Wiegm. Arch.* vii. 327; *Gray, Proc. Zool. Soc.* 1849, 91; *Cat. Ost. Coll. B. M.* 32.

Stemmatopus cristatus, *F. Cuvier, Dict. Sci. Nat.* xxxix. 551; *Mem. Mus.* xi. 196. t. 13. f. 3, *g, h, i.*

Stemmatopus mitratus, *Gray, in J. Brookes's Mus. Cat.* 36, 1828.

P. leonina, *Linn. S. N.* i. 55.

P. leonina, *Mohr. Isl. Nat.* 2; *Müller, Prod. Z. Dan.* viii.; *O. Fab. Faun. Græn.* 7.

Cystophora borealis, *Nilsson, Scand. F.* i. 383.

P. cucullata, *Bodd. Elench.* 107.

Phoca dimidiata, *Cretzschmar, fide Rüppell.*

Seal with a Caul, *Ellis, Hudson's Bay*, 134. t. 6. f. 4.

Klapmyds, *Egede, Grœnl.* 46.

Klap myssen, *Egede, Grœnl.* 62.

Hooded Seal, *Penn. Syn.* 342; *Shaw, Zool.* i. 262.

Inhab. North Atlantic. Brit. Mus.

Very *young*, grey, without spots when wet. Called *Blue-backs* in Newfoundland.

a. Skin, stuffed, of adult male.
b. Ditto ditto.
c. Skin, stuffed, of adult female.
d. Skin, stuffed, of half-grown young.

Phoca leucopla, *Thienem. Bemerk.* t. 13, 1824.

Phoca mitrata, *Milbert in Cuv. Oss. Foss.* v. 210.

a. Skull of adult. Crowns worn, the roots of the 1st, 2nd, 3rd and 4th rather enlarged, oblong club-shaped, rather elongate; the root of the 5th grinder compressed, of the left side simple, of the right partially divided into two short roots continued in grooves on each side. Greenland. Specimen described *Proc. Zool. Soc.* 1849, 92. No. 1.

b. The skull of an adult or aged specimen. Greenland. The crowns plaited, the roots of all the grinders enlarged and short, club-shaped and simple, separated from the crown by a narrow collar. Specimen No. 1 described *P. Z. S.* 1849.

c. Skull of an aged specimen. Greenland. The crowns plaited and tubercular, the roots of the grinders rather enlarged;

the roots of the 3rd grinder rather compressed, simple, with a groove on the outer side of the 4th and 5th grinders, scarcely enlarged, and divided into two distinct diverging roots. Specimen described No. 3. *P. Z. S.* 1849, 92.

d. Skull, without lower jaw, of nearly adult. Greenland. Wanting the grinders; but the cavity for the grinders shows that the 4th grinder on both sides had a short clavate root, with a slight central groove on the outer side, and the 5th grinder on each side had two separate roots. Specimen described No. 5. *Gray, P. Z. S.* 1849, 92.

e. Skull of a half-grown animal. Greenland. The crown of the grinders plaited and tubercular, the 4th grinder on each side with ovate, short, simple roots, and the 5th grinder with compressed, truncated, simple roots; the grinders are rather further apart than in the other skull. Specimen described No. 6. *P. Z. S.* 1849, 92.

f. Skull of a very young animal. Greenland. The crowns of grinders are very distinctly plaited; the 4th and 5th grinders of both sides have two distinct roots, and the 3rd grinder has a groove down the middle of the outer side. In all these skulls the grinders are close together, forming a nearly continuous line. Specimen described, *Gray, P. Z. S.* 1849, 92. No. 7.

g. Skull of nearly adult. Greenland. The crown of few grinders remaining plaited; the root of the 4th and 5th grinder of the left side, as shown by the cavities, divided into two roots; of the 4th grinder of the right side simple, with a slight groove on the outer side; and of the 5th grinder two-rooted, like the similar grinder on the outer side. Specimen described, *Gray, P. Z. S.* 1849, 92. No. 4.

2. Cystophora antillarum. West Indian Hooded Seal.

Skull, face broad. The outer upper cutting teeth and the canines broad, strongly keeled on each side and longitudinally plaited within. Fur grey brown, lips and beneath yellow.

Cystophora antillarum, *Gray, Proc. Zool. Soc.* 1849, 93.
Inhab. West Indies.

a. Stuffed specimen. West Indies, Jamaica. Mr. Gosse's Collection.

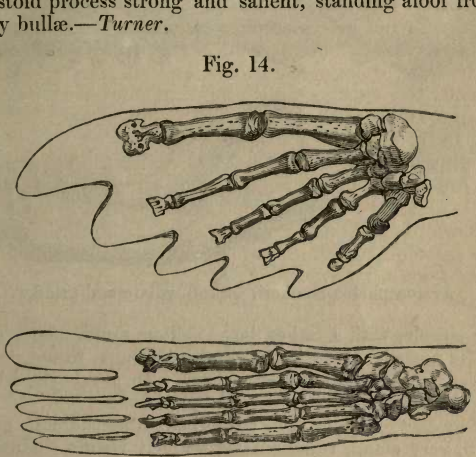
b. Skull of a very young specimen. The face is broader than the skull of *C. cristata* of the same size. The crowns of the teeth are plaited and tubercular. The 4th grinder has only a single root, the 5th grinder has two. West Indies, Jamaica. Mr. Gosse's Collection.

Specimen described, *Gray, Proc. Zool. Soc.* 1849, 93.

Subfamily 5. Arctocephalina. *Ears with a subcylindrical, distinct, external conch. Toes of the hind-feet subequal, short, with long membranes at the end: fore-feet finlike: palm and soles bald, longitudinally grooved. Nose simple, with a rather large callous muffle above and between the nostrils: cutting teeth* $\frac{2}{4}$, *upper often bifid; grinders* $\frac{6\cdot6}{6\cdot6}$.

The skull has a postorbital process, an alisphenoidal canal, the mastoid process strong and salient, standing aloof from the auditory bullæ.—*Turner.*

Fig. 14.



Arctocephalus Hookeri. Fore- and hind-feet.

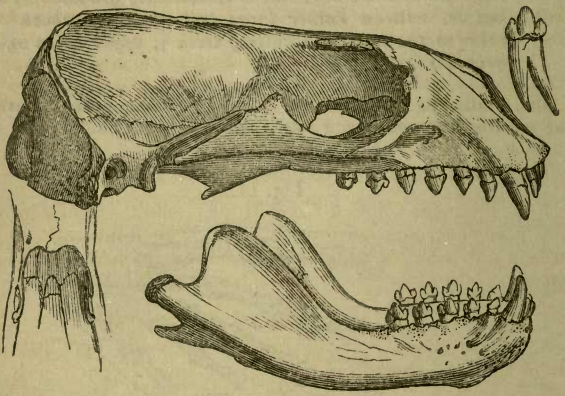
Arctocephalina, *Gray, Zool. Erebus & Terror*, 4; *Turner, Proc. Zool. Soc.* 1848, 88.
Otaria, *Peron, Voy. Terre Aust.* ii. 118; *Desm. Mamm.* 248; *Fleming, Phil. Zool.* ii. 187; *Gray, Griffith, A. K.* v. 182; *Nilsson, Vet. Akad. Hand.* 1837; *Scand. Fauna*; *Wiegm. Arch.* vii.
Phoca § 3, *F. Cuvier, Mem. Mus.* xi. 205.
Otariadæ, *J. Brookes, Mus. Cat.* 36, 1828.

13. Arctocephalus, *F. Cuv.*

Muzzle rather tapering in front. Cutting teeth $\frac{2}{4}$, upper nearly square. Grinders $\frac{6\cdot6}{6\cdot6}$. Palate of the skull rather narrower behind than in front; short, scarcely reaching to the middle of

the zygomatic arch. Lower jaw-bone narrow, rounded below, without any angle behind.

Fig. 15.



Arctocephalus Hookeri. Skull, palate and grinder.

Nose simple, with a rather large callous muffle above and between the nostrils. Whiskers cylindrical, thick, round, tapering, not waved, hinder ones largest. Ears with a subcylindrical, distinct, external conch.

The fore-feet elongate. The palms bald, longitudinally grooved. Claws 5, very small, rudimentary, scarcely visible. Hind-limbs rather produced. The legs free. The hind-feet elongated: the soles bald, longitudinally grooved: the toes subequal, short, webbed, and each furnished with a long membranaceous expansion, the web and the membranaceous expansion bald.

Arctocephalus (Arctocephale), *F. Cuvier, Mem. Mus.* xi. 205. t. 15. f. 1; *Dict. Sci. Nat.* lix. 463, 1829; *Fischer, Syn.* 230; *Gray, Zool. Erebus & Terror*; *Turner, P. Z. S.* 1848, 88. Otaria, sp., *Peron*; *Nilsson.*

Dr. J. Müller described three species from the skulls only viz. *O. Stelleri*, *O. Chilensis*, and *A. Lamairii* from Australia.

In the Leyden Museum (1845) there are four specimens of *Fur Seal*, all named *Otaria Ursina*; they are of a black or dark grey colour, with white tips to the hair and reddish under-fur: the largest is 4 feet long:—one is from Isles Aleutiennes, one from New Holland, and two from Isles Crussettes.

The *Hair Seals* in the same museum, and the skull from

Brookes's Museum, which I described as *Arctocephalus lobatus*, are called *O. Stelleri*: some are said to come from Japan and others from New Holland.

In King (*Narrat. Austral.* ii. 414, 1828) I pointed out the distinction between the *Fur Seal* of New South Shetland and the *Hair Seal* of Australia.

The skull from the cabinet of M. Faujus which Cuvier figures (*Oss. Foss.* v. 222. t. 18. f. 4), is much more like the skull of an adult *Arctocephalus* than of *Otaria jubata*; the outer and upper cutting teeth are scarcely larger than the others.

There are ten skulls of this genus in the Paris Museum:—

1, 2. From the Cape of Good Hope. Adult and half-grown. The palates become narrower behind. The front outer upper cutting rather large: grinders large, all except first and hinder upper with two lobes.—See *Cuv. Oss. Foss.* 221. t. 18. f. 5.

3. Old skull from Parzudasky.

4. From Australia, by MM. Quoy and Gaimard.

5. Adult. From Port Jackson. *P. cinerea.* Very little different from the adult from the Cape of Good Hope.

6, 7. Imperfect. King George's Sound. MM. Quoy and Gaimard (*Cuv. Oss. Foss.* 222; *Blainv. l. c.* 300).

8. Adult. Auckland? The Zélée, 1841.

9, 10. From America, by M. D'Orbigny. The grinders larger, more acute, and rather further apart.

* *Fur long, under coat thick, soft, silky.* Fur Seals.

1. Arctocephalus ursinus.

"Hair long, erect, thick, under-fur brownish red. Males black, older ones with the hairs white-tipped, the hair of the neck longer and stiff; females ash-coloured; of the very young black; flaps of hinder toes very long, slender. Length 8 or 9 feet."

Ursus marinus, *Steller, Nov. Com. Petrop.* ii. 331. t. 15 (copied in).

Phoca ursina, *O. Fab. Fauna Græn.* 6?; *Schreb.* iii. 289. t. 82; *Gmel. S. N.* i. 62; *Shaw, Zool.* i. 265. t. 72; *Fischer, Syn.* 231; *F. Cuv. Mem. Mus.* xi. 205. t. 15. f. 1, skull?

Otaria ursina, *Desm.*; *Peron & Lesueur, Voy.* ii. 41; *Nouv. Dict. H. N.* xxv. 595; *Mam.* 249; *Gray, Griffith, A. K.* v. 182.

Otaria ursina, var. *Mus. Leyden.*

Otaria Fabricii, *Lesson, Dict. Class. H. N.* xiii. 419, *from O. Fab.*

O. Krachenninikovii, *Lesson, Dict. Class. H. N.* xiii. 420.

Chat marine, *Krachenninikow, Hist. Kamtsch.* i. 306.

Arctocephalus ursinus, *F. Cuv. Dict. Sci. Nat.* xxxix. 554 ; *Gray, in Brookes's Cat. Mus.* 37 ; *Zool. Ereb. & Terror*, 3 ; *Nilsson, Wiegm. Arch.*
Ursine Seal, *Penn. Hist. Quad.* ii. 526, 531.
Ours marin, *Buffon, Supp.* vi. t. 47 ; *Cuv. Règ. A.* i. 167.
Sea Bears, *Forster, Cook's Second Voy.* ii. 203.
Young. Phoca nigra, *Pallas, Zool. Ross. Asiat.* 107 ?
Inhab. Northern Pacific Ocean, Kamtschatka. Greenland, *O. Fab.*

Skins collected to sell to the Chinese.—*Pallas.*

Pallas described a small Seal from the Curil Islands, which he regards as the same as *la Petit Phoque* of Buffon (P. pusilla, *Gmelin*), under the name of P. nigra, *Pallas, Zool. Ross. Asiat.* i. 107.

2. Arctocephalus Falklandicus.

Grey, under-fur red, young blackish. Length 4 feet.

Sea Bear, *Forster, Voy.* i. 174, ii. 528.
Fur Seal, *Clayton, Phil. Trans.* lxvi. 102 ; *Weddell, Voy.* 23, 134, 137.
Ursine Seal (part.), *Penn. Quad.* ii. 527.
Ours marin, *Buffon, H. N. Supp.* vi. 336. t. 47.
Otaria Forsteri, *Lesson, D. C. H. N.* xiii. 421.
Phoca Forsteri, *Fischer, Syn.* 232.
Falkland Isle Seal, *Penn. Quad.* i. 275, ii. 521 (*from Roy. Soc.*).
Phoca Falklandica, *Shaw, Zool.* i. 256 ; *Gray, in King's Narrat. Australia*, ii. 414 ; *Griffith, A. K.* v. 183.
Otaria Falklandica, *Desm. Mamm.* 252 ; *Fischer, Syn.* 233.
O. Shawii, *Lesson, D. C. H. N.* xiii. 424.
Seal or Sea Bear of Forster, *Hamilton, Nat. Library*, 261. t. 22.
Otaria Falklandica (Fur Seal of commerce), *Hamilton, Nat. Lib.* t. 25 ; *Ann. N. H.* ii. 81. t. 4, 1839.
Otaria Guerin, *Quoy et Gaim. Voy. Uran.* 71.
Platyrhinus Uraniæ, *Lesson, Man.* 204.
Young. Blackish.
Petit Phoque, *Buffon, H. N.* xiii. 341. t. 43 (young).
Little Seal, *Penn. Quad.* ii. 526.
Phoca parva, *Bodd. Elench.* 78.
P. pusilla, *Schreb. Saugth.* 314. t. 85 ; *Gmel. S. N.* i. 68.
Otaria pusilla, *Desm. N. Dict. H. N.* xxv. 600.
O. Delalandii, *F. Cuv. D. S. N.* xxxix. 423.
O. Peronii, *Desm. Mamm.* 250 ; *E. M.* t. 111. f. 2 ; *Gray, Griffith, A. K.* v. 182.
Otaire de Peron, *Blainv. Journ. Phys.* xci. 295.
Otaria Hauvillii, *Lesson, D. C. H. N.* xiii. 425.

Phoca Hauvillii, *Fischer, Syn.* 243, *both from Cuv. Oss. Foss.* v. 220.
Sea Bear, in Brit. Mus., *Hamilton, Nat. Lib.* 266. t. 23.
Phoca pusilla, adult? *Cuvier, Oss. Foss.* v. 220. t. 18. f. 5, skull.
Otaria ursina, var. *Mus. Leyden.*
? Phoca porcina, *Molina, Sag.* 260; *Shaw, Zool.* i. 260; *Fischer, Syn.* 234.
Porcine Seal, *Penn. Syn.* 178.
Otaria porcina, *Desm. N. Dict. H. N.* xxiv. 602.
Otaria Molinæi, *Lesson, Dict. Class. H. N.* xiii. 425.
? Otaria chilensis, *J. Müller, Wiegm. Arch.* 1841, 333 (skull only).
? Otariæ Ulloæ, *Tschudi, Consp. Mamm. Peru.*; *Fauna Peru. Mamm.* t.
? Long-necked Seal, *Grew. Mus.* 95; *Parsons, Phil. Trans.* xlvii. t. 6; *Penn. Quad.* ii. 521.
Phoca longicollis, *Shaw, Zool.* i. 256.
Phoca Weddellii, var., *Fischer, Syn.* 240.
? Otaria coronata, *Blainv. in Desm. Mamm.* 251; *Gray, Griffith, A. K.* v. 182.
Inhab. Antarctic Ocean, Falkland Islands, *Cook.* New Georgia, *Cook.* South Orkney and South Shetland, *Weddell.* Cape of Good Hope. Chili, *Molina.*

a. Skin of adult, female, without skull.
b. Skin of young with the under-fur grey. Falkland Islands. ("The adult is 5 feet long, and its skin worth 15 dollars.") Presented by Sir John Richardson, M.D.
c. Skin of young with the under-fur dark brown. Cape of Good Hope?
d. Skin of young with the under-fur dark brown. Cape of Good Hope.
A skull of a very young specimen. Cape of Good Hope? or Falkland Islands? Presented by Sir John Richardson.

3. Arctocephalus cinereus.

Grey, hair of neck rough, elongate, yellowish, hairs yellowish white and blackish; under-fur red. Length 7 feet.

Otaria cinerea, *Peron, Voy. T. Aust.* ii. 54? 77; *Desm. Mamm.* 251; *Quoy et Gaim. Voy. Astrol. Mamm.* 89. t. 12, 13 & 15.
Phoca cinerea, *Fischer, Syn.* 233?
Otarie (Oran du M. Gaimard), *Cuvier, Oss. Foss.* v. 222.
O. ursina, var. *Mus. Leyden.*
Young. Darker, hair black, silky.—*Quoy, l. c.* t. 13.
? Black Seal, *Bennett, Cat. Aust. Mus.* 7?
Inhab. South coast of Australia. Imperfect skull, *Mus. Paris.* Port Western, *Quoy.* Kangaroo Island, *Peron*?

Peron indicates a species from Eugene Island, Australia, under the name of Otaria albicollis, *Peron et Lesueur, Voy.* ii. 118; *Desm. Mamm.* 251. Phoca albicollis, *Fischer, Syn.* 233.

Cuvier observes, this species has the arms placed far forwards, and not as in other *Otariæ.—Oss. Foss.* v. 223.

Cuvier observes, "the only Otaria brought home by Peron, hence probably his *O. cinerea*, was 2 feet 9 inches long; it is rather whiter than the specimens from the Cape." The skull is not mentioned.—*Oss. Foss.* v. 221.

Peron, in speaking of the productions of Isle de Decrees, says they found a new Seal 9 or 10 feet long. "The hair of this animal is very short, very hard, and very thick (très grossier); but its skin is thick and strong, and the oil abundant."

** *Fur short, close-pressed, without any under-fur.* Hair Seals.

4. Arctocephalus lobatus.

The flaps to the hind-toes short, not so long as the toes: canines large, rugulose, thick at the base; grinders large, with a rugose keel round the inner side of the base; the 1st and 2nd with one small lobe; 3rd, 4th and 5th grinders with a distinct front and hinder lobe.

Otaria cinerea, *Gray in King, Narrat. Australia,* ii. 413; *Griffith, A. K.* v. 183 (not *Peron*?), 1827.
Arctocephalus lobatus, *Gray, Spic. Zool.* i. t. , skull; *Bull. Sci. Nat.* xvi. 113; *in J. Brookes's Cat. Mus.* 37, 1828.
Phoca lobata, *Fischer, Syn.* ii. 574.
? Otaria Lamairii, *J. Müller, Wiegm. Arch.* 1841, 334.
Otaria Stelleri (*Mus. Leyden,* 1845), *Faun. Japon.* t. 21, 22, 23, animal, t. 22. f. 3, skull.
Otaria jubata, part., *Gray, Cat. Osteol. Coll. B. M.* 33.

Young covered with soft fur, which falls off when the next coat of fur is developed.

Inhab. N. W. coast of Australia. Houtman's Abrolhos, *Mr. Gilbert.*

a. Skin of half-grown. Port Essington.
b. Skin of half-grown. Port Essington.
c. Skin of half-grown. Port Essington.
d. Jaws of skull, half-grown. Houtman's Abrolhos, Australia. From Mr. Gould's Collection.
e. Lower jaw, half-grown. Houtman's Abrolhos, Australia. From Mr. Gould's Collection.
f. Teeth, very young. Houtman's Abrolhos, Australia. From Mr. Gould's Collection.

g. Teeth, very young. Houtman's Abrolhos, Australia. From Mr. Gould's Collection.

h. Stuffed skin of adult. Black, forehead and crown pale yellowish. N. W. Australia. Presented by Capt. Sir George Grey, K.C.B.

i. Skull of *h*. Adult, very rugose, very like skull adult of *Otaria Leonina*, but the palate is short and much contracted behind, the teeth more lobed, and with a tubercular ridge below, like the younger skulls. N.W. Australia. Presented by Capt. Sir George Grey, K.C.B.

5. Arctocephalus australis.

The flaps to the hind-toes moderate; grey, with yellow reflections; head, cheeks, and side of muzzle whitish, beneath fulvous; neck thick; limbs beneath blackish; whiskers strong, flat, white.

Otaria australis, *Quoy et Gaim. Voy. Astrol. Mam.* 9. t. 10–14; *Nilsson, Vet. Akad. Hand.* 1837; *Fauna Scand.*; *Wiegm. Arch.* vii. 322.

Inhab. South coast of Australia, "King George's Sound," *Quoy*.

Most probably the same as the former.

6. Arctocephalus Hookeri.

Flaps of the hinder toes elongate, unequal, of the outer toes on each side longest: canines moderate: pale yellowish.

Canines slender, conical: grinders small, conical, smooth, without any tubercles at the base; the two front smaller; the 3rd and 4th with a single lobe in front; the 5th with a lobe in front and behind: whiskers round, very thick, black or whitish, smooth, not waved, hinder largest: fur brown grey, slightly grisled, pale, nearly white beneath; hair short, close-pressed, rather slender, flattened, black with whitish tips, the tips becoming larger in the underpart of the sides: feet reddish or blackish; front claws small, rudimentary; hind claws 5, the 2nd and 3rd largest, the 4th and the 5th and then the 1st smallest; toes moderate; membrane of the toes elongate, longer than the toes, the outer one broadest and largest, the rest nearly equal.

Arctocephalus Hookeri, *Gray, Voy. Erebus & Terror*, t. ; *Cat. Osteol. Spec. B. M.* 33.

Hair Seal, *Weddell*, 141?

Inhab. Falkland Islands and Cape Horn.

a. Skin, stuffed. Falkland Islands.

b. Skin, stuffed, with teeth. Falkland Islands.

c. Skeleton, full-grown. Falkland Islands. Antarctic Expedition. Presented by the Admiralty.

Skull figured *Zool. Voy. Erebus & Terror*, t. .

d. Skeleton. Antarctic Expedition. Presented by the Admiralty.

e. Skull, imperfect. Antarctic Expedition. Presented by the Admiralty.

f. Skull, imperfect. Antarctic Expedition. Presented by the Admiralty.

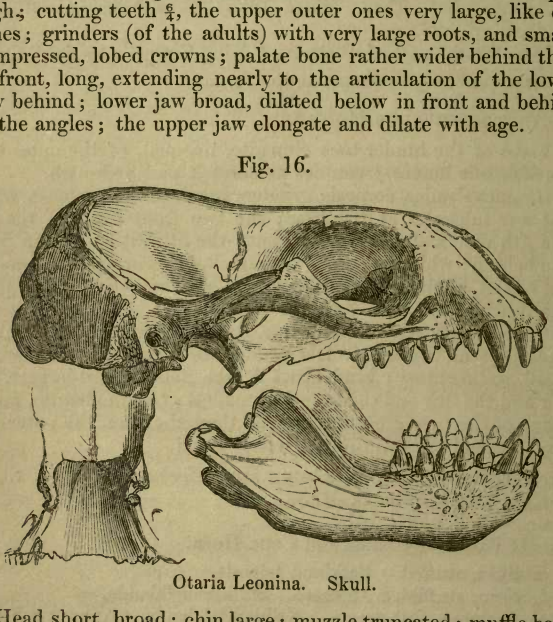
g. Skull. South Sea. Mr. Warwick's Collection.

The Eared Seal, *Pennant, Quad.* 268; Phoca flavescens, *Shaw, Zool.* i. 260. t. 73; Otaria flavescens, *Desm. Mam.* 252; *Gray, Griffith, A. K.* v. 183; 22 inches long, may be a young specimen of this species, but it is not stated if this Seal has under-fur or not. The young of *O. Forsteri* of the size mentioned is blackish.

14. Otaria, *Peron.*

Muzzle broad, high in front; forehead rather convex, occiput high; cutting teeth $\frac{6}{4}$, the upper outer ones very large, like canines; grinders (of the adults) with very large roots, and small, compressed, lobed crowns; palate bone rather wider behind than in front, long, extending nearly to the articulation of the lower jaw behind; lower jaw broad, dilated below in front and behind at the angles; the upper jaw elongate and dilate with age.

Fig. 16.



Otaria Leonina. Skull.

Head short, broad; chin large; muzzle truncated; muffle bald, between and above the nostril forms a distinct disk; ears small, short, conical.

Fore-feet rather large; claws indistinct; tail very short, conical; hind-feet large, with the three middle claws long, subcylindrical, the 5th or inner one rudimentary; toe-flaps very long, the outer one broad, 2nd, 3rd and 4th rather longest and narrow, the 5th shortest, all much longer than the very short toes; fur rather rough, of the head, neck and chin longer; hair cylindrical; under-fur none.

The skulls of the adult *Arctocephali* have been mistaken for the skulls of this genus, but the form of the hinder part of the palate, which is little altered by the age of the specimens, at once separates the two genera. I was formerly inclined to believe that the form of the hinder part of the palate altered, but the examination of the skin, with its skull attached, of an adult *Arctocephalus lobatus*, has proved the error of this theory.

Otaria, sp., *Peron & Lesueur, Voy. Terr. Austr.*; *Desm. Mam.*; *Nilsson, Vet. Akad. Hand.* 1837; *Scand. Fauna*, t. ; *Wiegm. Arch.* vii.
Platyrhynchus (Platyrhinque), *F. Cuvier, Mem. Mus.* ix. 209. t. 15. f. 2; *Dict. Sci. Nat.* lix. 465; *Gray, in Brookes's Cat. Mam.* 37, 1828; *Fischer, Syn. Mam.* 231.
Otaria, *Gray, Zool. Erebus & Terror*; *Turner, P. Z. S.* 1848, 88.
Platyrhinus, *Lesson, Mam.* 204.

1. Otaria Stelleri. Northern Sea Bear.

Reddish, females tawny.

Otaria Stelleri, *Lesson, D. C. H. N.* xiii. 420; *J. Müller, Wiegm. Arch.* vii. 330, 333.
Leo marinus, *Steller, Nov. Comm. Petrop.* ii. 360.
Phoca jubata, *Gmel. S. N.* i. 63, part.
Otaria jubata, *Peron et Lesueur, Voy.* ii. 40 (not *Desm.*).
Leonine Seal (part.), *Penn. Quad.* ii. 534.
Phoca Stelleri, *Fischer, Syn.* 231.
Otaria Californiana, *Lesson, D. C. H. N.* xiii. 420, *from*
Lion Marin de la Californie, *Chloris, Voy. Pict.* t. 11.
Phoca Californiana, *Fischer, Syn. Mam.* 231.
Otaria jubata (part.), *Nilsson, Vet. Akad. Hand.*; *Scand. Fauna*; *Wiegm. Arch.* vii. 381.
Inhab. Northern Pacific Ocean.

2. Otaria Leonina. Southern Sea Bear.

Deep brown.

Sea Lion, *Cook, Voy.* ii. 203; *Forster, Voy. round the World*, ii. 512; *Weddell, Voy.* 198.
Leonine Seal (part.), *Penn. Quad.* ii. 534.
Lions marins, *Pernetty, Voy.* ii. 47. t. 10.

Otaria Pernettii, *Lesson.*
Phoca jubata, *Schreb. Saugth.* 300. t. 83.
Otaria jubata, *Desm. Mam.* 248, 380 (*E. M.* t. 109. f. 3); *Gray, Griffith, A. K.* v. 184.
Otaria Pernettyi, *Lesson, Dict. Class. H. N.* xiii. 420.
Phoca Scout, *Bodd. Elench.* 172.
Le Lion Marin, *Buffon, H. Supp.* vi. 358. t. 48 & 49; *Forster, Cook's Voy.* iv. 54 (*from Forster MSS.*), copied.
Leonine Seal, *Shaw in Zool.* i. 270. t. 74 (altered).
Forster's Sea Lion, *Hamilton, Nat. Lib.* t. .
Otaria Forsteri, *Lesson.*
Phoca Ansonina, *Blainv. Journ. Phys.* 1820, 299.
Phoque à crinière, *Cuvier, R. A.* i. 167.
Phoca Leonina, *Blainv. Osteog. Phoca,* t. 6, skull, and t. 9, dentition.
Phoca Leonina, *Molina, Sagg.* 282–341.
Otaria Leonina, *Peron, Voy.* ii. 65.
Phoca Byronii, *Blainv. in Desm. Mam.* 240.
Mirounga Byronii, *Gray, Griffith, A. K.* v. 181.
Sea Lion, Island of Tinian, *Byron in Mus. Coll. Surg.*
Otaria, sp., *Cuvier, Oss. Foss.* v. 223.
Platyrhynchus (leoninus), *F. Cuv. Mem. Mus.* xi. 208. t. 15. f. 2, adult skull; *J. Brookes, Mus. Cat.* 37.
Otaria platyrhynchus, *Müller, Wiegm. Arch.* 1841, vii. 333.
Phoca jubata, *Pander & D'Alton,* t. 3. f. D. t. 2. f.
Otaria Molossina, *Lesson, Voy. Cog.* 109. t. 3, young; *fide skull Mus. Paris.*
Phoca Molossina, *Lesson, Bull. Sci. Nat.* viii. 96.
Lesson's Otary, *Hamilton, Nat. Lib.* t. 24, *from Lesson.*
Platyrhynchus molossinus, *Lesson, Man.* 203.
P. Uraniæ, *Lesson, Man.* 204?
Otaria Guerin, *Quoy & Gaim. Zool. Uran.* 71?
Sea Lion of Forster, *Hamilton, Nat. Lib.* t. 18.
Sea Lion of Pernetty, *Hamilton, Nat. Lib.* t. 19, *from Edinb. Mus.*
Sea Bear of the British Museum, *Hamilton, Nat. Lib.* t. 23?
Inhab. Southern Pacific Ocean. Patagonia.

a. Skin of adult, stuffed. West coast of S. America. Vera Cruz. Presented by Capt. Fitzroy, R.N.

b. Front of lower jaw of *a.* West coast of S. America. Vera Cruz. Presented by Capt. Fitzroy, R.N.

c. Skull of half-grown. West coast of S. America. Peru? From Mr. Bridges' Collection.

d. Skull, young. W. coast of S. America. Presented by Sir John Richardson, M.D.

THE END.

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